

EXHIBIT 1

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**UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WASHINGTON
AT SEATTLE**

IN RE: VALVE ANTITRUST LITIGATION

Case No. 2:21-cv-00563-JCC

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CLASS CERTIFICATION EXPERT REPORT OF LESLEY CHIOU, PH.D.

May 17, 2024

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1. INTRODUCTION

1.1. Qualifications

1. I received my Ph.D. in Economics from the Massachusetts Institute of Technology in 2005 and my B.A. in Mathematics and Economics from the University of California, Berkeley, in 2000. I am the Laurence de Rycke Professor of Economics at Occidental College. I have taught courses at all levels of the curriculum on Principles of Economics, Applied Econometrics, and Industrial Organization. I have also developed a course on the Economics of the Internet and Technology.
2. Many of my published research papers focus on the digital economy; pricing in different retail industries, including entertainment; antitrust issues in internet search markets; how consumer behavior responds to the business practices of two-sided platforms such as search engines and social media sites; how consumers search for online information; how consumers respond to pricing changes in retail and online markets; and how consumer demand evolves for online media and information markets. My research has been published in top-tier economics and management journals, including *Review of Industrial Organization*, *International Journal of Industrial Organization*, *Journal of Economics and Management Strategy*, *Management Science*, *Marketing Science*, *Journal of Econometrics*, and *Economics Letters*.
3. I have received grants from the National Bureau of Economic Research (NBER), the Networks, Electronic Commerce, and Telecommunications (NET) Institute, and Occidental College. My research has received numerous honors including the *International Journal of Industrial Organization*’s Paul Geroski Best Paper Award. I am frequently invited to present my work in professional conferences and at seminars.
4. I have served as a reviewer for a number of management and economics journals including *American Economic Journal: Microeconomics*, *Journal of Political Economy*, *Journal of Public Economics*, and *Management Science*.
5. A copy of my curriculum vitae is attached as Appendix A. A list of my prior testimony is attached as Appendix B.
6. I am being compensated for my work on this matter at my standard rate of \$900 per hour. I have been assisted in this matter by staff of Cornerstone Research, who worked under my direction. I receive compensation from Cornerstone Research based on its collected staff billings for its support of me in this matter. Neither my compensation in this matter nor my compensation from Cornerstone Research is in any way contingent or based on the content of my opinions or the outcome of this or any other matter.

1.2. Litigants and terminology

7. The defendant in this matter is Valve Corporation (“Defendant” or “Valve”). Valve is a video game developer and publisher that operates the PC video game distribution platform Steam. Valve was founded in 1996; it began as a developer of games such as *Half-Life*, *Team Fortress Classic*, and *Counter-Strike 1.0*, and later launched its digital

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platform Steam in 2003 to distribute its own games.¹ In 2005, Steam started offering games from other developers and publishers (i.e., third-party games).² Later, Valve also ventured into PC gaming hardware with products such as the Steam Controller, the Valve Index VR headset, and the Steam Deck, a portable handheld gaming PC.³

8. The proposed class representatives in this matter are Wolfire Games and Dark Catt Studios (“Named Plaintiffs” or “Plaintiffs”).⁴ Wolfire Games (“Wolfire”) is an independent video game development company that was founded in 2003.⁵ Dark Catt Studios (“Dark Catt”) was founded in 2012 and was initially focused on documentary work and freelance video journalism.⁶ In 2016, Dark Catt expanded into development of augmented and virtual reality (“VR”) games and applications.⁷
9. Wolfire and Dark Catt are part of a proposed class, defined in their Complaint as follows:⁸

¹ Jeff Dunn, “Full Steam ahead: The History of Valve,” *GamesRadar+*, October 4, 2013, available at <https://www.gamesradar.com/history-of-valve/>, accessed on December 7, 2023 (“But by the summer 1996, Newell was looking for a change. So by that August, he and his fellow co-worker/millionaire Mike Harrington took their fortunes and used them to start their own gaming company. They called it Valve, LLC, and ... they got started on their first game: Half-Life ... [In 1998, Valve] released Team Fortress Classic ... [In the early 2000’s] Valve released Counter-Strike 1.0 in an official capacity ... Steam was first unveiled at GDC 2002. When it launched a year later, it was far from the all-encompassing behemoth that we know it as today. In fact, it was first posited as a simple digital distribution surface whose main purpose was to deliver patches and other updates to online games more easily.”); Matt Sayer and Tyler Wilde, “The 19-year evolution of Steam,” *PC Gamer*, September 12, 2022, available at <https://www.pcgamer.com/steam-versions/>, accessed on December 6, 2023 (“2003: The beginning ... On September 12, Steam began life as a way for Valve to control the patching process for games like Counter-Strike, as well as curb cheating and provide easier access to any content the developer produced”). Note that in 2003, Valve dropped the LLC from its title and became Valve corporation. See Jeff Dunn, “Full Steam ahead: The History of Valve,” *GamesRadar+*, October 4, 2013, available at <https://www.gamesradar.com/history-of-valve/>, accessed on December 7, 2023 (“In 2003, it dropped the LLC from its title and became Valve Corporation.”).

² Jeff Dunn, “Full Steam ahead: The History of Valve,” *GamesRadar+*, October 4, 2013, available at <https://www.gamesradar.com/history-of-valve/>, accessed on December 7, 2023 (“In 2005, Valve made its first set of distribution agreements with third-party publishers, allowing it to diversify Steam’s game catalogue beyond its own titles.”).

³ Mike Mahardy, “GDC 2015: Valve Announces Steam Controller Launch Window, Price,” *IGN*, July 14, 2016, available at <https://www.ign.com/articles/2015/03/04/gdc-2015-valve-announces-steam-controller-release-date-price>, accessed on December 7, 2023 (“Valve’s Steam controller will be available in the U.S. this November, along with the newly announced Steam Link service.”); Stefan Etienne and Sean Hollister, “Valve just surprise revealed its own VR headset called the Valve Index,” *The Verge*, March 29, 2019, available at <https://www.theverge.com/2019/3/29/18287734/valve-index-virtual-reality-vr-headset-may-2019-reveal-announcement/>, accessed on December 7, 2023 (“Valve has surprise launched a teaser site featuring a brand-new virtual reality headset, called the Valve Index”); Mitchell Clark, “Valve will start selling the Steam Deck on February 25th,” *The Verge*, January 26, 2022, available at <https://www.theverge.com/2022/1/26/22902930/valve-steam-deck-release-date-gaming-handheld-pc/>, accessed on December 7, 2023 (“Valve announced that the Steam Deck will go on sale starting February 25th ... It’s good to finally have a date for when the handheld console will be coming out ... Valve Steam Deck hands-on: \$400 Switch-like portable gaming PC.”).

⁴ “Wolfire Games” refers to Wolfire Games, LLC. “Dark Catt Studios” refers collectively to Dark Catt Studios Holdings, Inc., and Dark Catt Studios Interactive LLC. See Consolidated Second Amended Class Action Complaint, *In Re: Valve Antitrust Litigation*, March 23, 2023 (“Complaint”), pp. 1 (“Plaintiffs Wolfire Games, LLC (‘Wolfire’), Dark Catt Studios Holdings, Inc., and Dark Catt Studios Interactive LLC (collectively with Dark Catt Studios Holdings, Inc., ‘Dark Catt’) (collectively with Wolfire, ‘Plaintiffs’) bring this antitrust action against Defendant Valve Corporation.”), 101 (“Plaintiffs bring this action ... as representatives of a Class”).

⁵ Itch.io, “Wolfire Games,” available at <https://wolfiregames.itch.io/>, accessed on April 15, 2024 (“Wolfire Games develops innovative, independent games for Windows, Mac OS, and Linux. Our company was started by David Rosen in 2003 to organize his open source video game contest entries. After graduating college in 2008, he was joined by his twin brother Jeff, and three friends, and Wolfire Games officially dove into the independent game industry!”).

⁶ Dark Catt Studios, “Home,” available at <https://darkcatt.com>, accessed on April 22, 2024 (“When we began in 2012 we were focused on documentary work and freelance video journalism.”).

⁷ Dark Catt Studios, “Home,” available at <https://darkcatt.com>, accessed on April 22, 2024 (“In 2016, the company began developing immersive and interactive content and now has several ventures underway, from full feature films and TV pilots to AR/VR games and applications.”).

⁸ Complaint, ¶ 375.

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“All persons or entities who, directly or through an agent, paid a commission to Valve in connection with the sale or use of a game on the Steam platform on or after January 28, 2017, and continuing through the present until the effects of its scheme are eliminated (the ‘Class Period’), and where either (1) the person or entity was based in the United States and its territories or (2) the game was purchased or acquired by a United States-based consumer during the Class Period. Excluded from the Class are (a) Defendant, its parents, subsidiaries, affiliate entities, and employees, and (b) the Court and its personnel.”

10. Plaintiffs retained two experts that filed reports in this matter on February 8, 2024 (“Plaintiffs’ experts”). The reports are the Class Certification Expert Report of Steven Schwartz, Ph.D. (“Schwartz Report”) and the Expert Report of Professor Joost Rietveld (“Rietveld Report”).

1.3. Allegations

11. Plaintiffs allege that Valve “uses its dominance over PC game distribution” to charge a supracompetitive commission rate on Steam and that it maintains alleged monopoly power through “various anticompetitive acts,” including a platform most-favored nation (“PMFN”) agreement.⁹ Plaintiffs claim that, as a result of Valve’s alleged conduct, “Competition, output, and innovation are suppressed.”¹⁰ Plaintiffs also claim that harm to members of the proposed class from the anticompetitive effects of Valve’s alleged conduct can be established with common proof.¹¹
12. Regarding Valve’s alleged conduct and its anticompetitive effects, Plaintiffs and their experts contend:
- a. That the relevant geographic market is global and that “the relevant product market in this matter is the market for third-party digital PC game distribution via platforms.”¹²
 - b. That Valve’s market share is consistent with monopoly power.¹³

⁹ Complaint, ¶¶ 4 (“Valve uses its dominance over PC game distribution to impose and anticompetitively maintain a 30% commission on nearly every sale made through its store.”), 5 (“Valve has been able to keep its commission fees at supracompetitive levels by actively suppressing competition to protect its market dominance.”), 9 (“Valve has for years maintained its dominance and thwarted effective competition by engaging in various anticompetitive acts. For example, Valve forces game publishers to agree to a Platform Most-Favored-Nations Clause (the ‘Valve PMFN’) as a requirement for access to Steam.”).

¹⁰ Complaint, ¶ 25.

¹¹ Complaint, ¶ 378 (“The anticompetitive conduct of Valve alleged herein has imposed, and threatens to continue to impose, a common antitrust injury on the Class Members.”).

¹² Class Certification Expert Report of Steven Schwartz, Ph.D., February 8, 2024 (“Schwartz Report”), ¶ 48 (“In this section, I apply economic principles to determine the product and geographic dimensions of the relevant product market. I conclude that the relevant product market in this matter is the market for third-party digital PC game distribution via platforms and the relevant geographic market is worldwide.”).

¹³ Schwartz Report, ¶ 130 (“Valve’s worldwide market share, measured in terms of third-party game user sales occurring on Steam, is between approximately [REDACTED]. As discussed in Section 4.2.1, this provides a powerful economic basis for the conclusion that Valve has monopoly power in the relevant market.”).

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- c. That Valve’s revenue share rate (which Plaintiffs and their experts call a “commission”) is substantially higher than it would be absent Valve’s alleged monopoly power and anticompetitive practices.¹⁴
 - d. That Valve maintains its monopoly power by imposing and enforcing a PMFN on publishers who sell games on Steam, absent which publishers would offer lower prices and different content on lower-fee platforms.¹⁵
 - e. That “[m]any users and developers are dissatisfied with the quality of Steam’s platform,”¹⁶ that “[Valve’s] investment in Steam has also been limited, as Valve’s anticompetitive conduct allows Steam to remain dominant without reference to its quality,”¹⁷ that Valve’s conduct harms innovation,¹⁸ and that absent the alleged conduct, Steam would provide a richer set of features.¹⁹
 - f. That Valve’s alleged monopoly power and anticompetitive conduct harms competition in the proposed relevant market and leads to higher revenue shares, less entry, less variety, and less innovation and quality.²⁰
13. Regarding allegations of class-wide harm, Plaintiffs claim that members of the proposed class suffered “common antitrust injury.”²¹ Dr. Schwartz articulates Plaintiffs’ theory of common harm as follows:²²

“Given Valve’s imposition of a standard pricing structure for publishers, if the PMFN policy is eliminated, the default commission rate would fall and that would benefit each publisher. Each publisher would only pay the new, lower, default commission rate. Thus, all, or virtually all, class members were injured

¹⁴ Schwartz Report, ¶ 197 (“Valve’s monopoly power allows it to set and sustain a supracompetitive commission rate that publishers must pay to secure distribution of their games on Steam.”).

¹⁵ Schwartz Report, ¶¶ 150 (“Valve has adopted policies that insulate it from competition by ensuring that offers of games on Steam are in parity with offers on other competing platforms ... Valve ensures parity both in terms of the content included in games and prices ... Together, Valve’s parity policies constitute a platform most-favored nation policy, or PMFN Policy.”), 168 (“Valve imposes barriers to entry through its PMFN Policy and enforcement practices. Absent these Valve-imposed barriers, other platforms could compete for publishers to join their platforms exclusively or increase the frequency with which they multihomed. Given the prevalence of comparatively lower commission rates on alternative game distribution platforms, publishers would further be incentivized to steer customers towards the distribution platform with the lowest commission rate, using lower prices or differentiated content to do so.”). My use of the term “platform” in this report is defined in Section 2.1.1.

¹⁶ Schwartz Report, ¶ 223 (“Many users and developers are dissatisfied with the quality of Steam’s platform and would prefer more choice in PC desktop game platforms.”).

¹⁷ Complaint, ¶ 58 (“[Valve’s] investment in Steam has also been limited, as Valve’s anticompetitive conduct allows Steam to remain dominant without reference to its quality”).

¹⁸ Complaint, ¶ 21 (“Innovation is the engine of the video game industry, but Valve’s imposition of its supracompetitive tax suppresses innovation and output across the industry while elevating the prices of PC games.”).

¹⁹ Complaint, ¶ 320 (“If the PC game distribution market were competitive, Valve would be forced to offer a competitive level of quality in its store as well, benefiting publishers.”); Schwartz Report, ¶ 240 (“In a but-for world with legitimate competition, Steam would be forced to innovate and adapt to consumer preferences in order to compete on the merits with other platforms, which would ultimately lead to better feature variety and choice for end users and developers.”).

²⁰ Complaint, ¶¶ 25 (“To afford Valve’s 30% commission, game publishers must charge higher prices to consumers and have fewer resources for innovation and creation. Game quality and choice suffers as a result, and gamers are injured by paying higher retail prices for fewer and lower-quality games. Competition, output, and innovation are suppressed, in ways that can never be fully redressed by damages alone.”), 211 (“Valve’s PMFN keeps revenue sharing percentages (and potentially game prices) artificially high and discourages new market entry.”).

²¹ Complaint, ¶ 378 (“The anticompetitive conduct of Valve alleged herein has imposed, and threatens to continue to impose, a common antitrust injury on the Class Members.”).

²² Schwartz Report, ¶ 242.

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provided that an economic analysis shows Valve’s commission rates would decrease in a world free of Valve’s PMFN Policy.”

14. As stated, Plaintiffs’ theory of common harm rests on several complex and interconnected claims and assumptions (explicit or implicit) that I will show to be false and unfounded. These claims include:
- a. That Valve’s revenue share structure is standardized for all publishers and supracompetitive (it is not), and that the alleged overcharge to individual proposed class members can be determined with common proof (it cannot).
 - b. That assessing the benefits publishers receive from Steam’s premium features, which affect the value they receive in exchange for Valve’s revenue share, can be done with common proof (it cannot; it requires individualized inquiry).
 - c. That all members of the proposed class are aware of the alleged PMFN (they are not) and that the alleged PMFN affects all members of the proposed class in a common way (it does not).
 - d. That each publisher’s ability to limit direct impact from Valve’s alleged conduct (i.e., the alleged PMFN’s restrictions that Plaintiffs allege caused a higher revenue share on Steam) by substituting to other distribution channels can be determined without individualized inquiry (it cannot), and that (contrary to fact) publishers and consumers do not consider first-party PC platforms (where the platform operator sells games it publishes) or gaming consoles (like Sony’s PlayStation or Microsoft’s Xbox) as alternatives to Steam.
 - e. That the pass-through of any alleged supracompetitive revenue shares from publishers to end consumers, as well as other pricing decisions such as steering consumers to lower-priced stores, can be determined without individualized inquiry of each publisher (it cannot).²³

1.4. Assignment

15. I have been asked by counsel for Valve to analyze Plaintiffs’ allegations in their Complaint and the information, methods, and opinions in Dr. Schwartz’s and Professor Rietveld’s expert reports and answer the following questions:
- a. Do Plaintiffs and their experts propose reliable economic methodologies to define a relevant antitrust market and assess Valve’s market or monopoly power, if any, in that market?
 - b. Do Plaintiffs and their experts propose reliable economic methodologies that can be used to establish the class-wide antitrust impact, if any, of Valve’s alleged conduct on proposed class members?

²³ I understand that Professor Ashley Langer has been asked to analyze the role of pass-through for the assessment of impact and damages in this matter in her report.

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- c. Can Dr. Schwartz’s “empirical approach” establish the class-wide antitrust impact, if any, of Valve’s alleged conduct on proposed class members?²⁴
 - d. Do Plaintiffs and their experts propose reliable economic methodologies that can be used to estimate class-wide damages, if any?²⁵
16. To answer these questions, I rely on several sources of information, including data produced by Valve in this case. I also rely on deposition testimony, documents produced by Valve and others, relevant public information on the gaming industry, and academic research. I also reviewed the reports submitted by Dr. Schwartz and Professor Rietveld and relevant supporting materials.
17. Appendix C to this report lists the documents, datasets, and testimony on which I rely in forming my opinions.

1.5. Summary of opinions

18. After careful study, I have formed the following opinions, which I discuss further in the body of my report. In my opinion, Plaintiffs and their experts’ methodologies cannot establish class-wide antitrust impact on proposed class members using common proof, nor can they estimate class-wide damages from the alleged conduct using common proof. To the contrary, individualized inquiry would be required.
- a. **Dr. Schwartz’s market definition and calculation of Valve’s market share are unreliable and do not provide common evidence of monopoly power.** Dr. Schwartz reached his opinion that a “high and sustained market share” provides common evidence that Valve has monopoly power only by inappropriately excluding from his proposed market definition important substitutes for buying or selling games on Steam to which consumers and publishers turn. I find that Dr. Schwartz’s exclusion of (a) first-party digital PC games (i.e., games published by the selling platform operator), (b) console games, and (c) physically distributed games, usually by retail stores, is inconsistent with evidence of demand substitution both from consumers and publishers to these substitutes for Steam. Dr. Schwartz’s estimates of the size of the market and of Valve’s participation in it are inconsistent with estimates from renowned industry participants. Dr. Schwartz’s proposed market size estimate for 2020 is less than [REDACTED] of the estimate provided by Newzoo and used by Plaintiffs in the Complaint, and his estimate of Valve’s market share in 2020 is nearly [REDACTED] times larger than the estimate provided by Microsoft to Brazil’s antitrust authority. See **Section 3**.
 - b. **Valve’s nominal revenue share rates are similar to other game sellers’ competitive revenue share rates.** I show that Valve’s 30 percent, 25 percent, and 20 percent nominal revenue share rates (depending upon sales volume) are similar to other video game sellers’ competitive revenue share rates. See **Section 4**.

²⁴ I understand that Professor Ashley Langer has been asked to analyze Dr. Schwartz’s two other approaches to attempting to establish class-wide antitrust impact on proposed class members: his “Platform Competition Model” and “yardstick” approaches.

²⁵ I understand that Professor Ashley Langer has been asked to analyze Dr. Schwartz’s methodologies for estimating class-wide damages, but when my opinions in this report and the facts underlying them bear on Plaintiffs’ and their experts’ methodologies for estimating class-wide damages, I have been asked to give my opinion on these methodologies.

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- c. **Lack of publisher information on the revenue they receive from Steam keys prevents Dr. Schwartz from showing common antitrust impact through allegedly supracompetitive revenue shares.** In order to reach his opinion that common proof can establish that publishers’ revenue shares on Steam are supracompetitive, Dr. Schwartz wrongly assumes that publishers’ revenue share rates have a uniform structure in the real world and would also in his but-for world. Contrary to his assumption, revenue shares in the real world depend upon evidence that must be determined individually. Specifically, Valve gives publishers Steam keys for their games, at no cost to the publisher, which publishers can then use to sell their Steam-enabled games on other stores. Publishers earn revenues from these sales, but *pay no fees and no revenue share* to Valve. Valve then hosts the games on Steam, provides the same services to the Steam key buyers as any other buyer on Steam, and incurs the costs of hosting and providing those services. Therefore, to determine the *effective* revenue share that a publisher pays Valve for games launched by the publisher’s customers on Steam requires knowing how much revenue the publisher received from selling Steam keys—revenue on which the publisher paid Valve zero revenue share. However, publishers do not report their Steam key unit sales or revenue to Valve, so this fundamental information needed to determine each publisher’s revenue share, and how it compares to the revenue share that publisher would pay in the but-for world, could be obtained only through individualized inquiry. Without knowing their Steam key revenue, it is not possible to determine which proposed class members paid an allegedly supracompetitive revenue share—or, if they did, how much they paid. See **Section 4**.
- d. **Disregarding that publishers differ in the benefits they derive from Steam’s premium features and so have different quality-adjusted revenue shares prevents Dr. Schwartz from showing common antitrust impact through allegedly supracompetitive revenue shares.** Contrary to Dr. Schwartz’s claims (based on incomplete evidence), my more systematic analysis shows that Steam’s features are described in industry publications as higher quality compared to competitors’ features and continue to improve over time. Differences in the benefits publishers derive from these features lead to differences in the *quality-adjusted* revenue share publishers pay in the real world (e.g., if two publishers pay the same revenue share but one benefits more than the other from Steam’s quality features, the publisher who benefits more pays a lower quality-adjusted revenue share). Comparing the quality-adjusted revenue shares in the real and but-for worlds would require individual analysis. Assessing antitrust injury to publishers from an allegedly supracompetitive revenue share requires individualized inquiry into publishers’ benefits derived from Steam features. See **Section 5**.
- e. **Disregarding that publishers would differ in their use of alternative platforms in a but-for world prevents Dr. Schwartz from showing common antitrust impact and damages through allegedly supracompetitive revenue shares.** Dr. Schwartz reached his opinion that common proof can establish publishers’ revenue shares in his but-for world only by (a) assuming that publishers would uniformly reduce their sales on Steam, and by

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(b) failing to appropriately capture how publishers would reallocate their titles and sales across platforms where they would allegedly sell games cheaper under a lower revenue share in the but-for world. However, publishers would likely differ in their strategies, and hence their use of alternative distribution channels, in the but-for world. The alternative distribution channels chosen by publishers would directly affect their revenue shares as they select an unpredictable mix of higher- and lower-revenue-share platforms. Available data are not sufficient to evaluate each publisher’s distribution strategies in the actual world, let alone which platforms they would choose in the but-for world. This is essential information to proving antitrust impact and estimating damages. See **Section 6**.

f. **Plaintiffs’ experts have provided no common proof of knowledge or enforcement of the alleged PMFN agreement.** Dr. Schwartz reached his opinion that common proof can establish that publishers learned of an alleged PMFN, and that Valve enforced it, without conducting any empirical research to determine if game prices on Steam and other platforms are, in fact, the same. I analyzed the empirical evidence from video game pricing data and found that prices often are not the same across platforms. However, even the evidence Dr. Schwartz considered is individualized, including (a) whether the publisher is aware of the alleged PMFN, (b) whether and how Valve enforces the alleged PMFN for each publisher, and (c) how each publisher would set prices and what content each publisher would sell in the but-for world. Plaintiffs’, Professor Rietveld’s, and Dr. Schwartz’s analyses are incapable of establishing class-wide injury from the alleged PMFN. See **Section 7**.

g. **Dr. Schwartz’s “empirical” approach to proving antitrust impact is flawed and is incapable of doing so with common proof.** In 2018, in response to competition from first- and third-party platforms, Valve adopted revenue share tiers to give additional revenue share to publishers of high-grossing games. In his “empirical” approach, Dr. Schwartz examines this change and claims that Valve’s revenue share tiers were only a limited response to competition, that Valve would have faced pressures to adjust revenue shares to a greater extent but for the alleged conduct, and that therefore all members of the proposed class are injured. Dr. Schwartz’s approach is incapable of demonstrating common antitrust impact. Dr. Schwartz’s “empirical” approach provides evidence *against* his assumption of class-wide injury by showing how, when Valve altered its revenue shares (in response to competition), it did so in a way that was *not* common across publishers on Steam. See **Section 8**.

h. **Dr. Schwartz has not shown (and cannot show) common antitrust injury to members of the proposed class.** Plaintiffs’ core economic theory is that the alleged PMFN caused publishers to have supracompetitive revenue shares, and therefore all publishers were impacted by the alleged conduct on a class-wide basis. Dr. Schwartz has not shown that Valve has a PMFN, let alone a PMFN that binds members of the proposed class in a common way. Dr. Schwartz has not shown that he has the ability to reliably calculate revenue shares for individual publishers, and he has omitted a source of revenue (Steam keys) from his calculations. Without

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being able to establish that a PMFN exists with class-wide proof, or that revenue shares are supracompetitive class-wide, Dr. Schwartz cannot demonstrate that a PMFN caused allegedly supracompetitive revenue shares with class-wide proof. Furthermore, in order to establish causation, Dr. Schwartz would need to consider many other aspects of the industry, such as the value the members of the proposed class place on Steam features, the rates at which they use alternative platforms, or whether publishers would price differently if the alleged PMFN did not exist. Taken together, Dr. Schwartz fails to show that class-wide evidence can prove the alleged conduct, the alleged harm, or causation between the two. See **Section 9**.

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2. BACKGROUND

19. I begin by providing background information about the parties and the video gaming industry, introducing industry facts that inform my opinions. Understanding the nature of the industry and how firms vary in their roles and characteristics is critical to assessing Plaintiffs’ allegations. In particular, establishing antitrust impact, and assessing whether the proposed impact of the alleged conduct is common across class members such that it can be established on a class-wide basis using class-wide evidence require individualized inquiry.

2.1. The video gaming industry

20. The video gaming industry is an entertainment industry specializing in the development, marketing, and distribution of video games. Video games are a form of interactive software used for entertainment, role playing, and simulation where players control images on a video screen.²⁶ Video games, as well as the video game industry, have rapidly and continuously evolved, with the introduction of innovations such as internet integration, VR, digital game delivery, and mobile gaming, among many others.²⁷
21. Below, I describe the types of firms in and structure of the video gaming industry (Section 2.1.1), the types of video games offered and purchased in the industry (Section 2.1.2), monetization strategies for video games (Section 2.1.3), and the economics of differentiated products and its role in video game pricing (Section 2.1.4).

2.1.1. Industry structure: developers, publishers, platforms, and retailers

22. Firms in the video gaming industry assume three main roles: development, publishing, and distribution of games, where distribution can either be physical (retailers) or digital (platforms).
23. **Developers** generate the code, artwork, and “gameplay” design (which I describe in Section 2.1.2), resulting in a video game.²⁸ They range in size from lone developers who create small, simple games to entire design “studios” that employ programmers, artists, and writers who create complex games with photorealistic graphics and compelling

²⁶ PCMag, “Video game,” available at <https://www.pcmag.com/encyclopedia/term/video-game>, accessed on December 6, 2023 (“Interactive software that is used for entertainment, role playing and simulation.”); Merriam-Webster, “Video game,” available at <https://www.merriam-webster.com/dictionary/video%20game>, accessed on December 6, 2023 (“[A]n electronic game in which players control images on a video screen”).

²⁷ Riad Chikhani, “The History Of Gaming: An Evolving Community,” *TechCrunch*, October 31, 2015, available at <https://techcrunch.com/2015/10/31/the-history-of-gaming-an-evolving-community/>, accessed on December 8, 2023 (“The real revolution in gaming came when LAN networks, and later the Internet, opened up multiplayer gaming ... Since smartphones and app stores hit the market in 2007, gaming has undergone yet another rapid evolution that has changed not only the way people play games, but also brought gaming into the mainstream pop culture in a way never before seen. Rapid developments in mobile technology over the last decade have created an explosion of mobile gaming, which is set to overtake revenue from console-based gaming in 2015 ... Virtual reality (VR) company Oculus was acquired by Facebook in 2014, and is set to release its Rift headset in 2016. The headset seems to lean perfectly toward use within the video games industry, and would potentially allow gamers to ‘live’ inside an interactive, immersive 3D world.”).

²⁸ Tomas Zegarar, “Game Developers vs Game Publishers: What’s the difference?” *HP*, July 19, 2020, available at <https://www.hp.com/us-en/shop/tech-takes/game-developers-vs-game-publishers>, accessed on December 7, 2023 (“A game developer is the person or organization that determines what a video game will look like. They are responsible for the game’s storyline and feel. Programmers within that organization write the code and create the artwork to implement the developer’s vision behind the game. The developer team’s job spans from concept creation to putting the finishing touches on gameplay.”).

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narratives.²⁹ Plaintiffs Dark Catt and Wolfire are small developers. Some publishers, like Valve, also develop video games.

24. **Publishers** are typically the largest firms in the video gaming industry by game revenue.³⁰ In exchange for a share of revenues, publishers work with physical retailers and online stores to market and distribute video games. Without access to publishers’ marketing and distribution relationships, developers historically found it difficult or prohibitively costly to market and sell their games.³¹ However, developers’ reliance on publishers diminished with the rise of digital game distribution (see Section 2.2) and, more importantly, with the advent of low-cost self-publishing options on digital distribution platforms, including Steam.³² Developers who self-publish do not need to share revenue with a publisher and are not subject to contractual constraints from a publisher.
25. **The contractual relationships between developers and publishers** vary and can be complex. The relationships typically involve either:
 - a. Whole ownership of the developer by the publisher.³³
 - b. Publishing contracts for video games where the publisher may offer support such as funding and guidance for development.³⁴

²⁹ Andy McDonald, “The solo indie developers who changed the world of gaming,” *BBC*, October 2, 2020, available at <https://www.bbc.co.uk/programmes/articles/32lB8gC6skS8Qcdow6t4Qvj/the-solo-indie-developers-who-changed-the-world-of-gaming>, accessed on December 8, 2023 (“[S]ome of the decade’s most revered titles have been the product of one person.”); Richard Walker, “Starfield’s 500-Strong Studio is the Biggest Team Bethesda Has Ever Assembled,” *Xbox Achievements*, October 10, 2022, available at <https://www.xboxachievements.com/news/news-42873-starfields-500-strong-studio-is-the-biggest-team-bethesda-has-ever-assembled.html>, accessed on December 7, 2023 (“But yeah, Starfield is a much bigger project, it’s like 500 people or something on the team, whereas I think [Fallout] 76 was maybe 200, tops”).

³⁰ Of the top [REDACTED] public video game companies by 2022 game revenue according to Newzoo data, [REDACTED] are video game publishers. I identify the top [REDACTED] companies using the [REDACTED]. I then determine publisher status through a manual review of the [REDACTED]. See Workpaper 1. These top [REDACTED] companies are discussed further in Section 2.3.

³¹ Tomas Zegarra, “Game Developers vs Game Publishers: What’s the difference?” *HP*, July 19, 2020, available at <https://www.hp.com/us-en/shop/tech-takes/game-developers-vs-game-publishers>, accessed on December 7, 2023 (“It’s not cheap to develop a video game. Developers, especially in the indie category, must work with other companies to put a game into your hands ... Developers don’t always have the resources to produce, deliver, and support a game all on their own servers. That’s why game publishers exist.”); Ryan Sumo, “What Does A Healthy Publisher/Developer Relationship Looks Like (With Real Contract Details!),” *Game Developer*, November 26, 2019, available at <https://www.gamedeveloper.com/business/what-does-a-healthy-publisher-developer-relationship-looks-like-with-real-contract-details->, accessed on December 7, 2023 (“In exchange for capital and information, a publisher will typically ask for profit sharing based on revenue generated after they recoup their costs.”).

³² Jennifer Mendez, “Are Distributors the New Publishers?” *Game Developer*, July 27, 2017, available at <https://www.gamedeveloper.com/business/are-distributors-the-new-publishers->, accessed on December 7, 2023 (“Once upon a time, developers had to rely on publishers for a lot more. Not just funding and marketing, but also the actual availability of their games. These days, it’s anything but.”).

³³ For example, Sony Interactive Entertainment, a video game publisher, owns a variety of development studios that create games for PlayStation and other devices (as discussed in Section 2.3), including studios such as Naughty Dog and Insomniac Entertainment. See Josh West, “PlayStation Studios list: Every studio Sony owns and what they are developing,” *GamesRadar+*, May 24, 2023, available at <https://www.gamesradar.com/playstation-studios-sony/>, accessed on April 15, 2024, (“PlayStation Studios is proving to be an incredible asset to Sony Interactive Entertainment. As you’ll see from our breakdown, covering the full PlayStation Studios list, this collection of first-party developers has established a reputation for creating industry leading experiences. This is where you’ll see some of the best PS5 games and most impressive PS5 exclusives emerge – thanks to the hard work from PlayStation Studios like Naughty Dog, Insomniac Entertainment, Sony Santa Monica, and plenty others.”).

³⁴ Ryan Sumo, “What Does A Healthy Publisher/Developer Relationship Looks Like (With Real Contract Details!),” *Game Developer*, November 26, 2019, available at <https://www.gamedeveloper.com/business/what-does-a-healthy-publisher-developer-relationship-looks-like-with-real-contract-details->, accessed on December 7, 2023 (“A publishing deal is one that first and foremost provides funding ... Aside from capital, a publishing deal typically also offers knowledge sharing and advice.”).

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- c. Distribution and marketing support, including for “indie games” developed by independent or “indie” developers.³⁵
26. Publishers often keep between 30 and 70 percent of the revenue from game sales, depending on the agreement with the developer.³⁶ Individual contracts can vary in a number of ways, and what publishers receive can change depending on the size of any advance the publisher pays the developer to support the development of the game, the timing of when that advance is received, as well as any recoupment scheme for making back the advance.³⁷ The agreements may also constrain different proposed class members’ economic relationship with Steam in other ways—for example, through contractual restrictions that prevent a publisher from launching a particular developer’s titles on a given digital distribution platform.³⁸ These contractual restrictions may affect the way in which different publishers are affected by the alleged conduct, as discussed in Appendix Section 10.
27. Deposition testimony from the head of business development at one publisher has described how contracts between publishers and developers are contingent on many factors, including the developer’s brand, the publisher’s brand, the costs of development, and the time required for development.³⁹ Consequently, this publisher

³⁵ Ryan Sumo, “What Does A Healthy Publisher/Developer Relationship Look Like (With Real Contract Details!),” *Game Developer*, November 26, 2019, available at <https://www.gamedeveloper.com/business/what-does-a-healthy-publisher-developer-relationship-looks-like-with-real-contract-details->, accessed on December 7, 2023 (“A distribution deal is one that provides no funding, but basically provides marketing and distribution support in exchange for revenue.”).

³⁶ Tom Marks, “Report: Steam’s 30% Cut Is Actually the Industry Standard,” *IGN*, January 13, 2020, available at <https://www.ign.com/articles/2019/10/07/report-steams-30-cut-is-actually-the-industry-standard>, accessed on May 6, 2024 (“Another source also stressed that just because a retailer takes 30% doesn’t mean the developer of the game actually gets the other 70%, saying publishers often earn between 30-70% of a sale themselves depending on the deal that has been struck.”).

³⁷ Tyler Wilde, “What a good (and bad) indie game publishing deal looks like,” *PC Gamer*, August 6, 2020, available at <https://www.pcgamer.com/what-a-good-and-bad-indie-game-publishing-deal-looks-like/>, accessed on April 29, 2024 (“There’s lots of variation in individual contracts ... some indie publishing deals involve no advance at all, while others involve millions of dollars ... Zero-advance deals usually happen when a game is nearly done. Rather than funding the game, the publisher comes in at the end solely to handle distribution and marketing. These deals aren’t necessarily bad, because the revenue share is typically much more favorable for the developer, with an average of 71 percent going to the dev. If there is an advance, the developer gets a smaller revenue share, and there’s almost always some kind of recoupment clause in the contract. Recoupment means that the publisher takes all or an extra portion of the revenue until it makes back the advance.”).

³⁸ For example, *Star Wars Battlefront II*, a game developed by the EA subsidiaries Motive Studios and DICE and published by EA, was not initially released on Steam because EA was not releasing games on Steam at the time. As another example, Raw Fury, a small games publisher who works with external game developers based in Stockholm, publishes its publishing agreement online. While Raw Fury does not prohibit the release of games on Steam as in the instance of *Star Wars Battlefront II*, they do contractually require good faith efforts to involve developers in marketing and game distribution decisions, although they maintain the final say in ultimate marketing and game decision strategies. See [REDACTED]

[REDACTED], accessed on May 16, 2024 (“[REDACTED]”); Raw Fury, “About Us,”

available at <https://rawfury.com/about/>, accessed on April 20, 2024 (“We publish games ... we follow our passion to help the next generation of developer magicians.”); Raw Fury, “Raw Fury Loves Publishing Your Games,” June 27, 2022, available at https://www.dropbox.com/sh/kx2oljt3k4c4qcl/AAC4CbvHdH1vWuCGoRpl3Fk-a/Publishing%20Agreement?dl=0&preview=%5BENG%5D20220627_Raw+Fury+Loves+Publishing+Your+Games.docx, accessed on April 20, 2024 (“Publisher has the exclusive right to market the Game and Developer entrusts and grants to Publisher the right to determine, in Publisher’s sole discretion, the manner and method of marketing and distribution of the Game ... Publisher shall, in good faith and to the extent reasonable, involve Developer in determining the manner and method of marketing and distribution of the Game.”).

³⁹ [REDACTED]

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does not have a standardized agreement with developers and instead negotiates individualized contracts.⁴⁰ This variation in relationships with developers exists within one publisher, but there are “hundreds” of similar publishers contracting with external developers.⁴¹

28. In the remainder of my report, I refer to any entity that lists a video game for sale on a digital distribution platform—whether a developer or publisher—as a “publisher.” When I refer to payments to publishers, this refers to payments made to the entity that lists a game for sale. During the proposed class period defined in Section 1.2, 32,469 publishers listed at least 74,869 games on Steam.⁴² Because Plaintiffs propose to define the class as all entities “who, directly or through an agent, paid a commission to Valve in connection with the sale or use of a game on the Steam platform,” both publishers *and* developers would be included as members of the proposed class in any instances where they agreed to divide the revenue share.⁴³
29. **Physical distributors (“retailers”)** distribute and sell games on physical media, including disc- and cartridge-based games and, in recent years, sell games through codes such as Steam keys.⁴⁴ These retailers can distribute physical media through brick-and-mortar stores as well as online. As discussed in Section 2.2, physical distribution of video games has waned in popularity in recent years.
30. **Digital distribution platforms (“platforms”)** are websites or software applications through which consumers can buy and/or play video games online over the internet. These platforms are “two-sided,” where “two sets of agents interact,” and “the decisions of each set of agents affect[] the outcomes of the other set of agents.”⁴⁵ Steam is a two-

⁴⁰ [REDACTED]

⁴¹ [REDACTED]

⁴² Workpaper 2. In this instance, I define a game to be a unique primary app ID. Not every package has an assigned primary app ID. Therefore, the number of games listed is at least as high as the number of unique primary app IDs in the data. Note that Valve is excluded from these counts.

⁴³ Complaint, ¶ 375.

⁴⁴ For example, a user can purchase access to a specific game from Best Buy and then receive a digital activation code, or key code, to redeem the game on Steam. See, e.g., Best Buy, “Starfield Standard Edition - Windows,” available at <https://www.bestbuy.com/site/starfield-standard-edition-windows/6548059.p?skuId=6548059>, accessed on April 29, 2024 (“Software Format: Physical (Download Code Only) ... Q: What platform/app will the game be on for PC? Steam, Xbox, or other? ... A: Steam.”); Bethesda Support, “Where do I redeem the code for the physical PC versions of Starfield?” available at <https://help.bethesda.net/#en/answer/60468>, accessed on April 29, 2024 (“The codes contained in the physical PC copies of Starfield are Steam codes.”).

⁴⁵ Marc Rysman, “The Economics of Two-Sided Markets,” *Journal of Economic Perspectives*, 23(3), 2009, pp. 125–143 (“Rysman 2009”) (“Broadly speaking, a two-sided market is one in which 1) two sets of agents interact through an intermediary or platform, and 2) the decisions of each set of agents affects the outcomes of the other set of agents, typically through an externality. In the case of a video game system, the intermediary is the console producer—in the scenario above—while the two sets of agents are consumers and video game developers. Neither consumers nor game developers will be interested in the PlayStation if the other party is not ... Pricing in two-sided markets has received considerable attention in formal economic research. The main result is that pricing to one side of the market depends not only on the demand and costs that those consumers bring but also on how their participation affects participation on the other side and the profit that is extracted from that participation. In a one-sided market, we can characterize the price–cost mark-up in terms of elasticity of demand and the

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sided platform involving video game publishers on one side and video game users on the other, as Plaintiffs’ experts both acknowledge.⁴⁶ There are two types of video game platforms:

- a. **Platforms that operate software applications (“software platforms”)** from which users can both purchase and launch games from the same platform. For example, Steam is a downloadable software application from which users can both purchase games and download and launch them.
 - i. Some of these software platforms (“cloud platforms”) allow users to play games on remote servers.⁴⁷ Users must therefore have a persistent internet connection. Cloud platforms can operate on more than one type of hardware (see Section 2.1.2 for the different types of devices on which software platforms operate).⁴⁸
 - ii. Other platforms, like Steam, allow users to download the game to their PCs and launch it from their locally saved copy.
 - iii. Platforms can either be “first-party” (focused on selling the platform-operator’s titles exclusively) or “third-party” (where the platform owner allows other publishers and developers to distribute games on the platform).
- b. **Storefront-only platforms (“storefronts”)** from which users can purchase but cannot launch games on that platform. These storefronts do not deliver game content to users through software applications from which users can download and launch games. For example, Green Man Gaming operates a website where users can purchase games, but they must use a different software platform to download and launch purchased games.⁴⁹ These storefronts also include publisher websites that sell games to play elsewhere. For example, the publisher Square Enix sells games directly on its own website that a user will launch from a different platform, such as Nintendo, PlayStation, or Steam.⁵⁰ This arrangement is typically implemented

marginal cost. But in a two-sided market, pricing decisions will also include the elasticity of the response on the other side and the mark-up charged to the other side.”).

⁴⁶ Schwartz Report, ¶ 30 (“Steam is a platform. Economists define a platform as an entity that facilitates interaction between one or more groups of users, like consumers and producers. Here, Steam connects game publishers/developers to game players, facilitating transactions between the two. Digital platforms, like Steam, take the form of ‘website[s], app[s] or other digital venue[s] that interact commercially with one or more group of users.’ While platforms that connect groups of users directly to people like them are called ‘one-sided’ or ‘single-sided’ platforms, platforms such as Steam, that connect two or more different groups of users in a physical or virtual space are called two-sided or multi-sided platforms.”); Deposition of Joost Rietveld, April 17, 2024 (“Rietveld Deposition”), pp. 24–25 (“Q. And is the video game industry characterized by two-sided market participants? ... THE WITNESS: There are segments of the gaming industry that are two-sided markets for sure. Q. And can you identify some of those? A. So console gaming, at markets, and also some PC distribution platforms. Q. Can you identify some platforms in each of these categories? A. Sure ... PC distribution, Valve’s Steam would be a good example.”).

⁴⁷ Jacob Roach and Kevin Parrish, “What is cloud gaming?” *Digital Trends*, March 29, 2021, available at <https://www.digitaltrends.com/gaming/what-is-cloud-gaming-explained/>, accessed on April 22, 2024 (“Cloud gaming is a method of playing video games using remote servers in data centers. There’s no need to download and install games on a PC or console. Instead, streaming services require a reliable internet connection to send gaming information to an app or browser installed on the recipient device.”).

⁴⁸ I discuss several examples of cloud platforms in Section 2.1.2 below.

⁴⁹ I offer a more thorough discussion of storefronts, including Green Man Gaming, in Section 2.3 below.

⁵⁰ Square Enix Store, “Platform,” available at <https://na.store.square-enix-games.com/video-games/platform>, accessed on May 8, 2024.

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through license keys that are sold on a storefront and then redeemed on other software platforms.⁵¹

31. **Platforms generally operate on a revenue share model.** Under this model, platforms distribute games, then keep a portion of the revenue generated from the sale of that game.⁵² Whenever I use the term “revenue shares,” I am referring to the proportion of revenues received by the platform operator (e.g., Valve) from sales of publishers’ games, unless otherwise specified.
 - a. “Headline revenue share rate” refers to the rate advertised by the platform as its starting rate for sales of publishers’ games that occur on the platform (e.g., 30 percent on Steam).
 - b. “Nominal revenue share rate” refers to the rate received by the platform for sales of publishers’ games that occur on the platform. In some instances (e.g., due to Valve’s additional revenue share tiers of 75 percent for the publisher (25 percent for Valve) or 80 percent for the publisher (20 percent for Valve) for games that reach \$10 million or \$50 million in sales), this rate differs from the headline rate. This is what Dr. Schwartz refers to as the “effective take rate” in his report.
 - c. “Effective revenue share rate” refers to the rate received by the platform considering *all platform-related sales* of publishers’ games, whether or not they occur on the platform. For example, for Steam this rate includes sales of Steam keys. Of these three definitions, this is the one that fully captures all revenues a publisher received related to the platform.
32. While it is common in this industry for platforms to operate using a revenue share model, other models exist. For example, [REDACTED].⁵³
33. Firms can occupy one or more of these roles in the industry. For example, Valve is both a developer and publisher that operates its own software platform, Steam. As another example, Electronic Arts is known largely as a publisher; however, it also develops,

⁵¹ Wes Fenlon and Tyler Wilde, “PC game storefronts compared: what you need to know about retailers and resellers,” *PC Gamer*, July 12, 2019, available at <https://www.pcgamer.com/pc-game-storefronts-compared-what-you-need-to-know-about-retailers-and-resellers/>, accessed on December 7, 2023 (“These stores sell game keys that you can activate on one of the distribution platforms above, often in bundles or at reduced prices.”).

⁵² Deposition of Scott Lynch (Valve), October 12, 2023 (“Lynch Deposition”), p. 63 (“Steam Distribution Agreement is typically, yeah, taking somebody’s game, selling it to customers, and then having a revenue share.”).

⁵³ [REDACTED]

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publishes, and distributes its games through its own software platform, the EA App.⁵⁴ This vertical integration strategy is common among larger firms in the industry.⁵⁵

2.1.2. Video games

34. In the video gaming industry, publishers sell video games that consumers purchase. Video games are commonly referred to as simply “games,” “titles,” or “game titles,” conventions that I adopt in my report.
35. **Video games are “differentiated products.”** Economics textbooks define a market with product differentiation as one where “Each firm produces a product that is at least slightly different from those of other firms.”⁵⁶ This means that the products are similar but not perfectly interchangeable, as they vary by characteristics or attributes. Video games fit this definition: they are similar in that they are all interactive software products used for entertainment, but video games may differ across various attributes. Consumers may have different preferences for the different attributes of each game. This has important implications for the economic analyses of video game pricing, as explained in Section 2.1.4, and for market definition and monopoly power, as explained in Section 3.1, which in turn inform the analysis of alleged harm to individual publishers.
36. Participants in the gaming industry describe video games using a variety of attributes. Four important ones are **genre, production budget, device availability, and platform availability**.
37. **Genres** are categories of games that share “similar mechanics, ideologies, or characteristics.”⁵⁷ Some common genres (among many others) include:
 - a. Role-playing games (“RPGs”), where players assume the role of a character or group of characters and progress their character(s) through the course of the game.
 - b. Shooter games, including the popular subset of first-person shooter (“FPS”) games that use a first-person perspective as players defeat enemies by shooting them.
 - c. Adventure games, where the primary goal is for players to explore a game world or environment.
 - d. Strategy games, where players make strategic or tactical decisions, often involving managing resources.

⁵⁴ For example, *Battlefield 2042* was developed by DICE, a studio owned by Electronic Arts. The title was subsequently published by Electronic Arts and sold on the EA App. See Electronic Arts, “Battlefield 2042,” available at <https://www.ea.com/games/battlefield/battlefield-2042/buy/pc>, accessed on April 22, 2024; EA Help, “Buying EA games: order and payment info,” August 30, 2023, available at <https://help.ea.com/en/help/account/buying-ea-games/>, accessed on December 8, 2023 (“Find the game you want to buy in the EA app Store ... Click Buy the game.”); Wired, “EA buys DICE for \$24M,” October 2, 2006, available at <https://www.wired.com/2006/10/ea-buys-dice-fo/>, accessed on December 8, 2023 (“DICE will become an Electronic Arts studio that works on the Battlefield franchise and developing new products, the company said.”).

⁵⁵ I summarize information about the largest firms in the video gaming industry and their roles in Section 2.3 below.

⁵⁶ N. Gregory Mankiw, *Principles of Microeconomics*, Tenth Edition, (Boston, MA: Cengage Learning, 2023) (“Mankiw 2023”), p. 343 (“Product differentiation: Each firm offers a product that is at least slightly different from those of other firms.”).

⁵⁷ Byron Simpson, “Video game genres: every game type explained,” *Uswitch*, July 1, 2022, available at <https://www.uswitch.com/broadband/guides/video-game-genres/>, accessed on December 6, 2023 (“A video game genre is a way of describing a style or category of games that share similar mechanics, ideologies, or characteristics.”).

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- e. Sports games that are based on real-world sports such as soccer or football.⁵⁸
- 38. Genres are not strict classifications. Games often bridge multiple genres, “mix[ing] and match[ing] facets from different genres.”⁵⁹ For example, *Fallout 4*, a popular title developed and published by Bethesda, is considered to be both an RPG and a shooter game.⁶⁰
- 39. **Production budget** refers to the money spent developing a game title. The size of the budget can affect game attributes such as length, world detail, and graphics quality (“graphics”). Games are sometimes loosely classified into two budget categories: triple-A (“AAA”) games and indie games.⁶¹ While there is not a common definition in the industry and not everyone accepts these terms, they are often used to broadly categorize games with higher or lower production budgets, although some games may fall in between.⁶²
- 40. In the rest of my report, I occasionally use these terms for convenience.
 - a. AAA titles are typically developed and published by large companies and are high-budget, high-priced games. These titles typically take longer for users to complete because of richly detailed worlds and realistic graphics that “[push] the boundaries of what consoles or computers are capable of.”⁶³

⁵⁸ Descriptions listed are based on [REDACTED]

[REDACTED], accessed on May 16, 2024. The description of FPS games as a sub-genre of shooter games is based on an article from Hewlett Packard. See Dwight Pavlovic, “Video Game Genres: Everything You Need to Know,” *HP*, July 23, 2020, available at <https://www.hp.com/us-en/shop/tech-takes/video-game-genres>, accessed on December 6, 2023 (“The shooter is another long-standing genre that developed several early offshoots and branched out into two primary sub-genres: the first-person shooter (FPS) and third-person shooter (TPS).”).

⁵⁹ Byron Simpson, “Video game genres: every game type explained,” *Uswitch*, July 1, 2022, available at <https://www.uswitch.com/broadband/guides/video-game-genres/>, accessed on December 6, 2023 (“It’s commonplace for games now to mix and match facets from different genres”).

⁶⁰ Dan Stapleton, “Fallout 4 Review,” *IGN*, May 1, 2017, available at <https://www.ign.com/articles/2015/11/09/fallout-4-review>, accessed on December 6, 2023 (“Most of the way this huge roleplaying-shooter game works is carried over from its excellent predecessors ... Of course, as is the tradition with developer Bethesda Game Studios’ open-world RPGs, the main story isn’t nearly as gripping an attraction as the huge number of well-written side quests ... Fallout 4’s gunplay feels more like a typical good-quality first-person shooter than the series ever has before.”).

⁶¹ Karim Ahmad, “AAA Games vs. Indie Games: What Are the Differences?” *MakeUseOf*, December 27, 2021, available at <https://www.makeuseof.com/aaa-games-vs-indie-games-differences/>, accessed on December 6, 2023 (“[D]espite the sheer number of games available, we can place most titles in one of two categories; either indie or AAA games ... As you can imagine, the budgets for [AAA games] are astronomical ... most AAA games are considerably long, featuring rich and detailed worlds that are meticulously crafted. The graphics are also some of the best in the industry ... In stark contrast to AAA titles, smaller studios or individuals develop indie games, not huge teams ... Because of the budget constraints, the games are often smaller in scale, and not as long either ... indie games don’t always look as graphically sharp as AAA titles.”). In some instances, games made by firms with smaller budgets than AAA games and larger budgets than indie games are referred to as double-A (“AA”) games. See Kaavya Karthikeyan, “Indie, AAA, and AA Games: A Comparison,” *Gameopedia*, February 22, 2022, available at <https://www.gameopedia.com/indie-aaa-aa-games-comparison/>, accessed on December 6, 2023 (“The costs for [AA games] are extremely variable, lying between that of an indie and a AAA game.”).

⁶² Deposition of Scott Lynch, 30(b)(6) (Valve), October 13, 2023 (“Lynch 30(b)(6) Deposition”), pp. 147–148 (“A. I don’t use the term ‘AAA games.’ Q. Why do you not use that term? A. I don’t find -- I don’t understand it. ... Q. ... How is it used in the common parlance in the industry? A. It’s -- there is not a common parlance in the industry. It could mean high quality. It could mean it sold well. It could mean it has lots of users. It could mean it’s really polished. That’s why I don’t use it. I actually -- there is not a common definition of it.”).

⁶³ Karim Ahmad, “AAA Games vs. Indie Games: What Are the Differences?” *MakeUseOf*, December 27, 2021, available at <https://www.makeuseof.com/aaa-games-vs-indie-games-differences/>, accessed on December 6, 2023 (“AAA games (AKA Triple-A games) are titles developed by large studios, with hundreds of game designers, concept artists, and developers working on them. As you can imagine, the budgets for these games are astronomical ... most AAA games are considerably long, featuring rich and detailed worlds that are meticulously crafted. The graphics are also some of the best in the industry, with several titles

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- b. Indie games are typically developed and published by small, independent teams or individuals and are often low-budget, low-priced games. These titles typically take a shorter time for users to complete the game because they are smaller in scale and “don’t always look as graphically sharp.”⁶⁴
41. A couple of examples illustrate the degree to which budgets can vary between AAA and indie games. AAA titles such as those in the *Call of Duty* franchise have development budgets exceeding \$300 million.⁶⁵ Indie games, on the other hand, range in cost from as low as \$2,000 to over \$150,000 to produce.⁶⁶ Budgets do not always predict sales. Some big-budget games fail, like EA’s *Immortals of Aveum*, with a \$125 million production and marketing budget, released in 2023 on Steam, Epic Games Store, the EA App, and Xbox and PlayStation consoles.⁶⁷ Meanwhile, some low budget games are very successful. For example, *Stardew Valley*, a critically acclaimed indie title released in 2016 that has sold tens of millions of copies, was created by a single developer, Eric Barone, who was simultaneously working part-time as a theater usher “to help stay afloat.”⁶⁸

often pushing the boundaries of what consoles or computers are capable of. Because they cost more money, they retail at a much higher price as well.”).

⁶⁴ Karim Ahmad, “AAA Games vs. Indie Games: What Are the Differences?” *MakeUseOf*, December 27, 2021, available at <https://www.makeuseof.com/aaa-games-vs-indie-games-differences/>, accessed on December 6, 2023 (“In stark contrast to AAA titles, smaller studios or individuals develop indie games, not huge teams ... Because of budget constraints, the games are often smaller in scale, and not as long either ... and the pricing [of indie games] is often low ... indie games don’t always look as graphically sharp as AAA titles”).

⁶⁵ Competition and Markets Authority, “Anticipated acquisition by Microsoft of Activision Blizzard, Inc.: Final Report,” April 26, 2023, available at https://assets.publishing.service.gov.uk/media/644939aa529eda00c3b0525/Microsoft_Activision_Final_Report_.pdf, accessed on April 15, 2024 (“CMA MS-ABK Final Assessment”), ¶ 9.18 (“A report by IDG submitted by a third party dated August 2021 notes that development budgets are reaching unprecedented ranges. The report observes that while 5 years ago most AAA console/PC releases had development budgets between \$50-150 million, on average, games that are greenlit today, with a potential release in 2024-2025, are being approved for development budgets of \$200 million or higher. Also, the report says that some AAA franchises like CoD have development budgets already exceeding \$300 million, and the next GTA and other future tent-poles are also expected to hit \$250 million or higher.”).

⁶⁶ Tim Hoang, “Entering the Indie Games Market at the Lowest Cost Possible,” *Game Developer*, April 24, 2018, available at <https://www.gamedeveloper.com/business/entering-the-indie-games-market-at-the-lowest-cost-possible>, accessed on December 7, 2023 (“Level 1 games ... typically cost between \$2k and \$10k to build ... Level 2 games ... \$10K to \$50K investment ... Level 3 games ... to the tune of \$50K to \$150K ... Level 4 games ... [start] out at \$150K+[.]”).

⁶⁷ Jordan Gerblich, “EA flop *Immortals of Aveum* reportedly cost around \$125 million, former dev says ‘a AAA single-player shooter in today’s market was a truly awful idea,’” *GamesRadar+*, February 12, 2024, available at <https://www.gamesradar.com/ea-flop-immortals-of-aveum-reportedly-cost-around-dollar125-million-former-dev-says-a-aaa-single-player-shooter-in-todays-market-was-a-truly-awful-idea/>, accessed on May 9, 2024 (“FPS *Immortals of Aveum*, which received mixed reviews and was deemed a financial flop. ... The development cost was around \$85 million, and I think EA kicked in \$40 million for marketing and distribution.”); Electronic Arts, “*Immortals of Aveum* Arrives Today, Combining a Cinematic Single-Player Story With Spellbinding FPS Combat,” August 22, 2023, available at <https://ir.ea.com/press-releases/press-release-details/2023/Immortals-of-Aveum-Arrives-Today-Combining-a-Cinematic-SinglePlayer-Story-With-Spellbinding-FPS-Combat/>, accessed on May 11, 2024 (“*Immortals of Aveum* is available now on PlayStation 5, Xbox Series X|S and PC via the EA app, Steam and Epic Games Store”).

⁶⁸ Hope Bellingham, “*Stardew Valley* has sold 30 million copies, and its creator says it’s ‘thriving more than ever,’” *GamesRadar+*, February 27, 2024, available at <https://www.gamesradar.com/stardew-valley-has-sold-30-million-copies-and-its-creator-says-its-thriving-more-than-ever/>, accessed on May 12, 2024 (“Reflecting on the game’s trajectory since its launch in 2016, Barone writes: ‘With ... over 30 million copies sold, *Stardew Valley* is thriving more than ever’”); Jesse Singal, “How a First-time Developer Created *Stardew Valley*, 2016’s Best Game to Date,” *Vulture*, March 14, 2016, available at <https://www.vulture.com/2016/03/first-time-developer-made-stardew-valley.html>, accessed on December 7, 2023 (“[*Stardew Valley*] was produced by a single developer who had never before made a commercial game: Eric Barone ... For four years, he says, he worked an average of ten hours a day, seven days a week, on *Stardew Valley* ... and to help stay afloat he worked part-time as an usher at Seattle’s Paramount Theatre.”).

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42. **Device availability** refers to the types of devices on which someone might play games. Industry reports often discuss three main-types: PCs, dedicated game consoles (e.g., Sony’s PlayStation or Microsoft’s Xbox devices), and mobile devices (e.g., smartphones).⁶⁹ These devices vary in their portability, convenience, and ability to play different kinds of games. PCs and dedicated game consoles typically have higher-quality graphics (discussed below) and more user-friendly controls—through a game controller or keyboard and mouse—but tend to be less portable and convenient compared to mobile devices.⁷⁰
43. As discussed in Section 3.1.2, the historical differentiation between PCs and dedicated game consoles has waned in recent years. The introduction of Sony’s PlayStation 4 and Microsoft’s Xbox One, both released in 2013, made consoles more similar to PCs compared to previous console generations.⁷¹ Consequently, many popular games are released for both PCs and consoles, and industry trends such as “cross-play” enable users to play the same games with each other across different types of devices.⁷²
44. **Platform availability.** As discussed in Section 2.1.1, platforms are websites or software applications through which consumers can buy and/or play video games through the internet. Platforms vary in quality and features which affect consumers’ preferences for playing games on different platforms and their decisions on where to buy games.⁷³ In some instances, games are available on one platform but not another,

⁶⁹ Ulyana Chernyak, “Video Game Market Overview: Console vs. PC vs. Mobile,” *Game Developer*, May 27, 2014, available at <https://www.gamedeveloper.com/production/video-game-market-overview-console-vs-pc-vs-mobile>, accessed on December 7, 2023 (“The categories we can break the gaming sphere into are Console, PC, and Mobile.”). This breakdown is still relevant today. For example, in its “Global Games Market” reports, Newzoo estimates revenues for console games, PC games, and mobile games. See Newzoo, “Games Market Reports and Forecasts,” available at <https://newzoo.com/games-market-reports-forecasts>, accessed on December 7, 2023.

⁷⁰ Starloop Studios, “Mobile Games Vs. PC Vs. Console Games: What Market is the Best Bet?” available at <https://starloopstudios.com/mobile-games-vs-pc-vs-console-games-what-market-is-the-best-bet/>, accessed on December 7, 2023 (“The top of the most loved gaming platforms are PCs, mobiles, and consoles, each with their own features, advantages, and disadvantages ... The convenience of playing mobile games anywhere is one of the favorite benefits of mobile games that players love ... Of all the platforms, PC gamers are at the top in terms of graphics ... [Console games also have] [h]igh quality [and a] [h]igh gaming experience[.]”). Some PC and console devices are instead designed for portability (e.g., the Steam Deck and the Nintendo Switch, which I compare in Section 3.1.2). See Jowi Morales, “Handheld Gaming Consoles vs. Smartphones: 6 Questions You Should Ask Before Buying,” *MakeUseOf*, August 12, 2022, available at <https://www.makeuseof.com/handheld-gaming-consoles-vs-smartphones/>, accessed on December 7, 2023 (“If you’re a hardcore gamer and want to play games on the road, your first thought would be to get a handheld console like the Steam Deck or Nintendo Switch.”).

⁷¹ Sam Byford, “The Xbox Series X is basically a PC,” *The Verge*, December 13, 2019, available at <https://www.theverge.com/circuitbreaker/2019/12/13/21020149/xbox-series-x-pc-specs-analysis>, accessed on December 7, 2023 (“With last night’s surprise reveal of the Xbox Series X, Microsoft answered that question in emphatic fashion. It is a console that looks unlike anything that has ever been released. Except, well, a gaming PC. And that’s very encouraging ... From what Sony’s saying, the PS5 has been designed around similar principles[.]”).

⁷² Many games now allow for cross-platform multiplayer, in which mobile, console, and PC gamers can all play together at the same time. For example, *Fortnite* can be played on PS4, Xbox One, Switch, PC, mobile, Xbox Series X, and PS5. See Jesse Lennox, “All cross-platform games (PS5, Xbox Series X, PS4, Xbox One, Switch, PC),” *Digital Trends*, April 16, 2023, available at <https://www.digitaltrends.com/gaming/all-cross-platform-games/>, accessed on December 7, 2023 (“Cross-platform support is becoming more important in the world of video games. Multiplayer hits like *Call of Duty: Warzone 2.0* and *Fortnite* have pushed crossplay into the limelight, and now most AAA multiplayer games release with at least partial cross-platform support.”). Moreover, many gamers report spending time playing video games on multiple platforms. See Orla Meehan, “Cross-platform players are spending more time and money on PC and console games,” *Newzoo*, May 10, 2023, available at <https://newzoo.com/resources/blog/cross-platform-players-spending-more-on-pc-and-console>, accessed on December 7, 2023 (“In the PC & Console Gaming Report 2023, we found that there is a significant share of players (PC and/or console gamers, specifically) who game on the three major platforms (PC, console, and mobile).”).

⁷³ For example, Steam and EGS, two platforms for PC games, vary regarding game library, tools for game developers, game sales, digital rights management, and streaming capabilities. See Jordan Minor, “Steam vs. Epic Games Store: Which PC Game Store

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sometimes for a limited time, such as a year.⁷⁴ Many platforms are available only on specific devices, so the device a consumer selects to play video games on dictates the platforms available to them. In particular, console devices use proprietary operating systems that integrate the device with the platform, which excludes other platforms from participating.⁷⁵ For example, Sony’s PlayStation Store is a platform that is available only on PlayStation consoles, and Sony does not allow other platforms on PlayStation devices.⁷⁶

45. More recently, cloud platforms such as Amazon Luna and Google Stadia entered the video game distribution industry, although Stadia departed in January 2023. Unlike the PlayStation Store or Nintendo eShop, these platforms typically do not require specific hardware and instead can operate on a variety of devices.⁷⁷ For example, games on Amazon Luna can be played through Edge, Chrome, or Safari web browsers on many different devices, including PCs, tablets, TVs, and mobile devices, with no apparent restrictions on available content.⁷⁸ Additionally, subscription services such as PS Plus Premium and Xbox Cloud Gaming provide cloud streaming capabilities allowing users access to games released only on PlayStation or Xbox consoles through a variety of devices, including PCs.⁷⁹

Deserves Your Dollars?” *PCMag*, August 25, 2020, available at <https://www.pcmag.com/comparisons/steam-vs-epic-games-store-which-pc-game-store-deserves-your-dollars>, accessed on December 7, 2023.

⁷⁴ For example, EGS, a PC software platform, pursued a strategy of paying publishers to release their games exclusively on its platform. See Tyler Wilde, “There are more Epic Store exclusives coming over the next 2 years than have released so far,” *PC Gamer*, February 5, 2021, available at <https://www.pcgamer.com/there-are-more-epic-store-exclusives-coming-over-the-next-2-years-than-have-released-so-far/>, accessed on December 7, 2023 (“There haven’t been many Epic Store exclusivity announcements recently, which got me wondering if Epic might be winding down that part of its strategy. Nope. According to Epic, the opposite is the case. ‘We have more exclusive titles coming in the next two years than we have published to date,’”).

⁷⁵ *PCMag*, “Video Game Console,” available at <https://www.pcmag.com/encyclopedia/term/video-game-console>, accessed on April 15, 2024 (“Video game consoles are typically powered by operating systems and CPUs that differ from desktop computers. The consoles are under the control of their respective manufacturers, and the software is geared to the machine’s capabilities. Games are not generally interchangeable with other game consoles or desktop computers, although software publishers may develop games for more than one platform.”).

⁷⁶ Soham De, “The PlayStation Store: What We Love and What We Hate,” June 28, 2021, *MakeUseOf*, available at <https://www.makeuseof.com/playstation-store-love-hate/>, accessed on December 7, 2023 (“Right now, the only place you can buy digital PlayStation games is on the PS Store. Sony’s insistence on having publishers sell the digital version of their PS games exclusively on the PS Store means that the format, pricing, and design of the digital marketing of PS games is all down to Sony.”).

⁷⁷ Aisha Malik, “Amazon Luna officially launches in the U.S. with free games for Prime members and more,” *TechCrunch*, March 1, 2022, available at <https://techcrunch.com/2022/03/01/amazon-luna-officially-launches-in-the-u-s-with-free-games-for-prime-members-and-more/>, accessed December 7, 2023 (“Amazon’s cloud-based game streaming service, Amazon Luna, is officially launching”); Sean Hollister and Nick Statt, “Google’s Stadia cloud gaming service is coming November 19th: Everything you need to know,” *The Verge*, November 8, 2019, available at <https://www.theverge.com/2019/6/6/18654632/google-stadia-price-release-date-games-bethesda-ea-doom-ubisoft-e3-2019>, accessed on December 7, 2023 (“[T]he exciting new service ... beams high-end console and PC games to any Chrome web browser, Chromecast Ultra TV dongle or Pixel 3 smartphone from beefy new Google servers.”); Stadia Help, “Stadia Announcement FAQ,” available at <https://support.google.com/stadia/answer/12790109>, accessed on April 17, 2024 (“On September 29, 2022, Google announced that the Stadia servers will be turned off on January 18, 2023.”).

⁷⁸ Amazon Luna is also compatible with many controller options, including its own Luna Controller, as well as Bluetooth-linked gaming controllers or a PC-style mouse and keyboard. See Amazon, “Welcome to Luna,” <https://www.amazon.com/luna/getting-started>, accessed on December 7, 2023 (“You can play Luna on your Windows PC, MAC, Fire TV, Fire Tablet, iPad, iPhone, Chromebooks, select Android phones, supported Samsung Smart TVs and LG Smart TVs ... Play with the Luna Controller, powered by Cloud Direct technology ... Play with other compatible controllers or a mouse and keyboard using Bluetooth or USB.”).

⁷⁹ PlayStation, “Welcome to PlayStation Plus,” available at <https://www.playstation.com/en-us/ps-plus/>, accessed on April 30, 2024 (“Cloud streaming Enjoy streaming access to a wide range of PS4 games from the Game Catalog, and hundreds of PS3, PS2 games and more from the Classics Catalog, via your PS5, PS4 and PC.”); Xbox, “Xbox Cloud Gaming (Beta),” available at <https://www.xbox.com/en-US/cloud-gaming>, accessed on April 30, 2024 (“Enjoy the console games you love on the devices you

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46. **Differentiation in other dimensions.** Games that are similar along the main dimensions described above can still differ in other meaningful ways such as:
- a. **Gameplay**, what players do in the game and how they interact with it.⁸⁰
 - b. **Story/narrative**, the characters, as well as the sequence of events that unfold in the game.⁸¹
 - c. **Graphics**, the artistic style in which the game is presented and the quality of that presentation.⁸²
 - d. **Multiplayer functionality**, whether players can play alone or with other players, either in the same physical location or through the internet, with functionality often enabled by software platforms.⁸³
 - e. **Format**, whether a game is sold on a physical disc or as a digital download.⁸⁴
 - f. **Edition**, whether a given title is purchased as only the “base game” or as a “Deluxe Edition.”⁸⁵
47. Games can differ across multiple dimensions. For example, *The Witcher III: Wild Hunt*, released on May 18, 2015, and *Undertale*, released on September 15, 2015, are both available on Steam and are both listed as RPGs but had vastly different production

already have with Xbox Cloud Gaming. You can play using an Xbox Wireless Controller, Sony DualShock 4, and more”); Xbox, “Compatible devices for Xbox cloud gaming” available at <https://support.xbox.com/en-US/help/games-apps/cloud-gaming/verified-devices-for-xbox-cloud-gaming>, accessed on April 30, 2024 (“List of compatible devices ... MacBooks MacOS 14.1.2 and later Windows devices Windows 10 version 20H2 and later”).

⁸⁰ Margaret Rouse, “Gameplay,” *Techopedia*, December 21, 2016, available at <https://www.techopedia.com/definition/1911/gameplay>, accessed on December 7, 2023 (“Gameplay is a term used to define the way players interact with a certain video or computer game.”).

⁸¹ Chris Stone, “The evolution of video games as a storytelling medium, and the role of narrative in modern games,” *Game Developer*, January 7, 2019, available at <https://www.gamedeveloper.com/design/the-evolution-of-video-games-as-a-storytelling-medium-and-the-role-of-narrative-in-modern-games>, accessed on December 7, 2023 (“[Narrative] refers to storytelling, and the relation of events and characters ... the representation of an event, or a series of events[.]”).

⁸² Kevin Murnane, “A Guide To Console Game Graphics Terminology [Updated],” *Forbes*, November 25, 2017, available at <https://www.forbes.com/sites/kevinmurnane/2017/11/25/a-guide-to-console-game-graphics-terminology/>, accessed on December 8, 2023 (“Games can look radically different on different consoles because each system’s hardware configuration imposes unique constraints on graphics quality.”).

⁸³ Microsoft, “Common multiplayer scenarios,” March 15, 2023, available at https://learn.microsoft.com/en-us/gaming/gdk/_content/gc/live/features/multiplayer/live-common-multiplayer-scenarios, accessed on December 8, 2023 (“There are many different types of multiplayer scenarios ... The local play (living-room play) scenario is based on two or more players playing a game together (either versus each other or cooperatively on a single device ... The online play with friends scenario is the most traditional online multiplayer experience. In this scenario, an Xbox member wants to play a game only with friends—not with strangers.”).

⁸⁴ Logan Plant, “Why Digital Games Could Totally Dominate Physical Formats In Just a Few Years,” *IGN*, March 31, 2021, available at <https://www.ign.com/articles/why-digital-sales-could-totally-dominate-physical-formats-in-just-a-few-years>, accessed on December 8, 2023 (“Overall sales of digital versions of video games have slowly been catching up to physical game sales over the last few years. Now, the scale is tipping towards digital more than ever.”).

⁸⁵ A given title can often be offered in different “versions” or “editions”: there is a “base game,” and extra versions contain additional content on top of the base game. These versions with additional content are commonly referred to as “Deluxe Editions,” although naming conventions vary depending on the content included. For example, editions of games containing all content released for that game can be referred to as “ultimate” or “complete” editions, among other terms. To illustrate, *The Witcher III: Wild Hunt – Complete Edition* contains the base game and all available additional content, including two story expansions, *Hearts of Stone* and *Blood and Wine*. See Steamworks, “Creating and Configuring Deluxe Packs,” available at <https://partner.steamgames.com/doc/store/application/packages/deluxe>, accessed on December 8, 2023 (“A Deluxe Edition is typically comprised of the base game plus some additional content.”).

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budgets.⁸⁶ Production and marketing for *The Witcher III: Wild Hunt* cost \$81 million, more than 1,000 times larger than the approximately \$50,000 that *Undertale* raised for production through a Kickstarter campaign.⁸⁷ Similarly, *The Witcher III: Wild Hunt* and *Call of Duty: Modern Warfare 2* are both AAA games with multimillion-dollar production budgets and are both available on Steam.⁸⁸ However, these games are in separate genres. *The Witcher III: Wild Hunt* is listed under Steam’s RPG genre while *Call of Duty: Modern Warfare 2* is listed under Steam’s “Action” genre.⁸⁹ Games are often available on different devices and platforms. *The Witcher III: Wild Hunt* is available on multiple PC software platforms (including Steam and Good Old Games (“GOG”)) as well as on console (including PlayStation and Xbox).⁹⁰

48. Similar to films, books, or other forms of entertainment, video game “franchises” are common. Franchises are collections of game titles in the same fictional universe and often share similar gameplay.⁹¹ For example, *The Witcher III: Wild Hunt* is one title of the seven-title *Witcher* game franchise, a series of games in the fantasy world created by author Andrzej Sapkowski.⁹² Franchises can acquire huge popularity in this industry, with the most popular game franchises selling hundreds of millions of units over many years or decades.⁹³

⁸⁶ *The Witcher III: Wild Hunt* and *Undertale* are available on Steam and listed as RPGs. See Steam, “The Witcher® 3: Wild Hunt,” available at https://store.steampowered.com/app/292030/The_Witcher_3_Wild_Hunt/, accessed on December 8, 2023; Steam, “Undertale,” available at <https://store.steampowered.com/app/391540/Undertale/>, accessed on December 8, 2023.

⁸⁷ Eddie Makuch, “This is How Much The Witcher 3 Cost to Make,” *GameSpot*, September 9, 2015, available at <https://www.gamespot.com/articles/this-is-how-much-the-witcher-3-cost-to-make/1100-6430409/>, accessed on December 8, 2023 (“CEO Adam Kicinski revealed [*The Witcher 3: Wild Hunt*’s] total budget—including development and marketing costs—as 306 million zloty or about \$81 million USD.”); Mike Suszek, “Crowdfund Bookie, July 21 - 27: Terminator 2, UnderTale, Last Dream,” *Engadget*, July 29, 2013, available at <https://www.engadget.com/2013-07-29-crowdfund-bookie-july-21-27-terminator-2-undertale-last-dr.html>, accessed on December 8, 2023 (“This week in crowdfunding ... UnderTale by Toby Fox - \$51,124[.]”).

⁸⁸ Ben Fritz, “Video game borrows page from Hollywood playbook,” *Los Angeles Times*, November 18, 2009, available at <https://www.latimes.com/archives/la-xpm-2009-nov-18-fi-ct-duty18-story.html>, accessed on December 8, 2023 (“Including marketing expenses and the cost of producing and distributing discs, the launch budget [of *Call of Duty: Modern Warfare 2*] was \$200 million”).

⁸⁹ Steam, “The Witcher® 3: Wild Hunt,” available at https://store.steampowered.com/app/292030/The_Witcher_3_Wild_Hunt/, accessed on December 8, 2023; Steam, “Call of Duty®: Modern Warfare® 2 (2009),” available at https://store.steampowered.com/app/10180/Call_of_Duty_Modern_Warfare_2_2009/, accessed on December 8, 2023.

⁹⁰ GOG, “The Witcher 3: Wild Hunt,” available at https://www.gog.com/en/game/the_witcher_3_wild_hunt, accessed on April 22, 2024; PlayStation, “The Witcher 3: Wild Hunt,” available at https://store.playstation.com/en-us/product/UP4497-PPSA10407_00-00000000000000N2, accessed on December 8, 2023; Xbox, “The Witcher 3: Wild Hunt,” available at <https://www.xbox.com/en-US/games/store/the-witcher-3-wild-hunt/BR765873CQJD>, accessed on April 22, 2024.

⁹¹ Steamworks, “Franchise Pages,” available at https://partner.steamgames.com/doc/store/franchise_pages, accessed on December 8, 2023 (“A franchise is typically defined as a set of titles that are built in the same fictional universe, gameplay style, or intellectual property.”).

⁹² The Witcher, “The Witcher,” available at <https://www.thewitcher.com/us/en/>, accessed on December 8, 2023 (“[There are] 7 games in The Witcher franchise ... The Witcher game is set in the universe created by Andrzej Sapkowski in his series of books.”) (Capitalization edited from website).

⁹³ Top franchises such as *Grand Theft Auto*, *Pokémon*, *Super Mario*, *Call of Duty*, and *Tetris* each have over 350 million units sold. See Markets Insider, “10 Best-Selling Video Game Franchises Of All Time: Tetris, Call of Duty, Super Mario And More,” March 11, 2022, available at <https://markets.businessinsider.com/news/stocks/10-best-selling-video-game-franchises-of-all-time-tetris-call-of-duty-super-mario-and-more-1031273798>, accessed on December 8, 2023 (“Video game companies can see years of success with franchises that have multiple titles or annual releases. Franchises that last for years can prove lucrative for the companies that own them as well.”).

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49. Games in the same franchise and with similar attributes can also be differentiated products.⁹⁴ For example, Activision Blizzard released *Call of Duty: Modern Warfare* and *Call of Duty: Black Ops Cold War* in 2019 and 2020. Both are FPS games in the *Call of Duty* franchise.⁹⁵ Despite these similarities, many consumers buy and play both games, implying that the titles are not perfect substitutes.⁹⁶

2.1.3. Monetization strategies for video games

50. Publishers monetize their games in a variety of ways. These include the sale of physical discs, digital games, add-ons to games, and virtual goods within a game.
51. As described further in Section 2.2, at the launch of Steam, most publishers distributed games on physical discs. The monetization of these games relied on a wholesale-retail relationship with physical stores. The cost of distributing games at physical stores includes the costs of producing and transporting physical media and operating retail locations.⁹⁷ At launch, games from major AAA publishers historically had a retail price of \$59.99 since late 2005.⁹⁸
52. While selling games at \$59.99 remained prevalent as the industry transitioned from physical to digital distribution, the transition to digital distribution opened many new monetization strategies.

⁹⁴ The same game can also vary based on the availability of game features across platforms. I discuss this in greater detail in Section 5.1.2 below.

⁹⁵ Jordan Sirani, “Everything We Know About Call of Duty: Modern Warfare – Story, Multiplayer, Release Date, and More,” *IGN*, January 13, 2020, available at <https://www.ign.com/articles/2019/08/06/everything-we-know-about-call-of-duty-modern-warfare-aa-story-multiplayer-release-date-and-more>, accessed on December 8, 2023 (“Call of Duty returns in 2019 with a reboot of the popular Modern Warfare subseries. The FPS will be the sixteenth mainline Call of Duty game[.]”); Michael Higham, “Call of Duty: Black Ops Cold War Release Date is November 13th,” *GameSpot*, August 26, 2020, available at <https://www.gamespot.com/articles/call-of-duty-black-ops-cold-war-release-date-is-no/1100-6481403/>, accessed on December 8, 2023 (“Call of Duty: Black Ops Cold War’s release date has been confirmed ... November 13, 2020.”).

⁹⁶ In fact, Activision Blizzard released features enabling players to share achievements across games. See Ethan C, “The Future of Warzone – Continuous Support for Modern Warfare and Black Ops Cold War,” *COD Tracker*, November 5, 2020, available at <https://cod.tracker.gg/warzone/articles/black-ops-cold-war-warzone-future>, accessed on December 8, 2023 (“For the first time in Call of Duty history, Season One brings universal and synchronized player progression that works between Black Ops Cold War, Modern Warfare, and Warzone!”). Data from Valve’s hardware ownership survey suggests that there is [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] See Workpaper 3.

⁹⁷ GameRant, “Video Game Prices: Why Games Are \$60, Where Your Money Goes, & Who Benefits Most,” July 20, 2015, available at <https://gamerant.com/video-game-prices-breakdown-514/>, accessed on December 8, 2023 (“From every \$60 video game sale, we can estimate that roughly 27 of those dollars go to the publisher (Ubisoft, for instance), \$15 goes to the retailer (GameStop, Target, or other stores), \$7 each goes to returns (games that don’t sell) and the platform (such as Xbox), and the remaining \$4 goes to distribution and cost of goods.”). See also, e.g., GameStop Corporation, SEC Form 10-K/A for period ended January 29, 2005, filed on September 2, 2005, pp. 16–17 (“We have approximately 2,500 full-time salaried, 2,300 full-time hourly and between 12,000 and 18,000 part-time hourly employees depending on the time of year ... All of our stores are leased.”).

⁹⁸ Ben Lindbergh, “Farewell to the \$60 Video Game,” *The Ringer*, October 23, 2020, available at <https://www.theringer.com/2020/10/23/21530092/rising-video-game-prices-70-dollars-call-of-duty-ps5-xbox-series-x>, accessed on December 8, 2023 (“The cost of games had remained stable since 2005, when ‘Call of Duty 2’ set the standard price.”).

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- a. Games are now offered at a **variety of price points**, including much lower prices. For example, in 2022, 74 percent of all games available on Steam had a base price of less than \$10, and 11 percent had a base price of less than \$1.⁹⁹
- b. Publishers on Steam also offer **frequent sales events**. Sales events occur when games are temporarily offered at a price lower than the base or posted price. On average, the price paid for a game on Steam in 2022 was ■ percent lower than the base price.¹⁰⁰ Most pricing adjustments occur through sales rather than changes to base price. Industry reporting suggests that demand for video games is generally such that permanently lowering the list price of a game will not increase sales enough to justify the price decrease over the long term.¹⁰¹ Sales events are different—they increase consumer awareness for a game and give consumers a sense of urgency to make a purchase, which increases volume over the short term.¹⁰² Consequently, many (although not all) sales on Steam occur when games are on sale, with ■ percent of all game sales on Steam in 2022 occurring when the transacted price was lower than the base price.¹⁰³ Note that, while Steam sometimes invites publishers to participate in sales events, publishers always set their own prices on Steam.¹⁰⁴
- c. **Downloadable content (“DLC”)** allows publishers to monetize their games over a longer time period. After a game’s release, publishers can introduce additional

⁹⁹ Game is defined here as a package ID, which is the unit of sales in the Steam package revenue data. See Appendix Section 17.1. I consider a package’s base price to be the maximum base price seen in the package revenue data in the year 2022. To avoid currency issues, I restricted my analysis to sales with prices in U.S. dollars. See Workpaper 4.

¹⁰⁰ Workpaper 5.

¹⁰¹ Kyle Orland, “Steam’s ‘price parity rule’ isn’t wreaking havoc on game prices,” *Ars Technica*, May 13, 2021, available at <https://arstechnica.com/gaming/2021/05/why-lower-platform-fees-dont-lead-to-lower-prices-on-the-epic-games-store/>, accessed on December 8, 2023 (“Theoretically, a publisher using reduced platform fees to lower its asking price could increase the overall number of copies sold, creating a win-win situation in which the publisher makes more overall profit as well. In practice, though, things don’t tend to work that way. Lowering the base price of a game from \$60 to \$50 ‘isn’t going to move [enough additional] people’ to buy a game, [F-Squared analyst Mike] Futter said. ‘I don’t think it would be statistically significant ... even if Valve wouldn’t require price parity, the PR nightmare isn’t worth it.’”).

¹⁰² Kyle Orland, “Steam’s ‘price parity rule’ isn’t wreaking havoc on game prices,” *Ars Technica*, May 13, 2021, available at <https://arstechnica.com/gaming/2021/05/why-lower-platform-fees-dont-lead-to-lower-prices-on-the-epic-games-store/>, accessed on December 8, 2023 (“Price sensitivity in games is such that lowering the base price will rarely drive enough incremental sales to offset’ the lost revenue per sale ... But that general rule only applies to the base price for digital games, Piscatella added. When games go on temporary sale, as they frequently do on pretty much every digital storefront, the resulting boost in sell-through can help increase publisher profits for a time. ‘Promoted short-term sales carry a sense of awareness and urgency to purchase, so they combine to boost volume,’ ... ‘... the change has a short-term impact, whether or not the price change is temporary or permanent.’ Sales aside, keeping prices consistent across different platforms (with different platform cuts) might be the simplest way to go for many publishers. ‘Most game publishers in today’s market seem to prefer the same pricing across many stores, no matter what platform cut they receive.’”).

¹⁰³ Workpaper 6.

¹⁰⁴ Steamworks, “Discounting,” available at <https://partner.steamgames.com/doc/marketing/discounts>, accessed on December 8, 2023 (“Q: Are promotions mandatory on Steam? A: No. We might invite you to take part in a special event or promotion, but there is nothing that you are required to participate in.”); Steamworks, “Steam Themed Sale Events,” available at https://partner.steamgames.com/doc/marketing/upcoming_events/themed_sales, accessed on April 16, 2024 (“Steam regularly hosts themed sale events (typically designated as Fests) to showcase various genres and categories of games. These events: Have specific eligibility requirements and criteria [and] Utilize an auto-invitation and registration process ... A discount is not required to participate in Steam themed sale events, though each event page will most prominently feature discounted games ... If you would like to use a custom discount instead of the official discount listed in the Discount Management page, you are welcome to do so. We would recommend using the official discount listed to guarantee your title is discounted for the duration of the event.”).

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game content that users can purchase and download separately to augment their initial purchase.¹⁰⁵

- d. In addition to offering discounted prices on individual games, publishers can offer their games in “**bundles**” with other games or DLC. These bundles are often offered at steep discounts.¹⁰⁶
- e. Publishers can also monetize through consumer purchases of virtual goods within a game, also called “in-game purchases” or “**microtransactions**.”¹⁰⁷ For example, *Call of Duty: Black Ops Cold War* features an in-game store where players can buy cosmetic upgrades that change the appearance of the player’s character.¹⁰⁸
- f. Publishers sometimes do not charge for the base game at all and monetize exclusively through microtransactions. This business model is often called “**free-to-play**.”¹⁰⁹
- g. Some services distribute games through **subscription models** where users pay a recurring fee instead of, or in addition to, a game’s base price.
 - i. Publishers of some massively multiplayer online games (“MMOs”) operate on a model where consumers pay a monthly subscription fee in addition to the games’ base price. Examples include *Final Fantasy XI* and *World of Warcraft*.¹¹⁰
 - ii. Other sellers offer **multi-game subscriptions** (“MGS”) where consumers have access to a set of games for a monthly price. For example, EA Play provides access to a set of Electronic Arts games for a monthly fee, and Xbox’s subscription service

¹⁰⁵ Chrissy Montelli, “What is DLC? Understanding downloadable content, a feature of nearly every new game,” *Business Insider*, May 27, 2021, available at <https://www.businessinsider.com/guides/tech/dlc-meaning>, accessed on December 8, 2023 (“[DLC] refers to add-ons to a game that give it extra features that weren’t included with the game’s initial release ... Some games offer DLC for free ... However, it’s much more common for companies to charge for DLC, especially if it adds a significant amount of content.”).

¹⁰⁶ Jon Bitner, “Every Steam Game Bundle You Can Buy Now At Fanatical And Humble,” *GameSpot*, April 26, 2023, available at <https://www.gamespot.com/gallery/every-steam-game-bundle-you-can-buy-now-at-fanatical-and-humble/2900-4726/>, accessed on December 18, 2023 (“Looking to snag a bunch of games without dropping a bunch of cash? Then you’ll want to check out the latest bundles from Humble and Fanatical—which give you a chance to score dozens of games for just a few bucks. There’s even an intriguing Mystery Egg Bundle that pulls together up to 20 mystery Steam keys for \$13.49 ... As for Humble, many of its bundles allow you to ‘pay what you want,’ making it easy to add a handful of games to your collection for just a few bucks. Every game you get in these bundles is a Steam key.”).

¹⁰⁷ Saddique Ansari, “The Economics of Microtransactions,” *Economics Online*, August 3, 2023, available at <https://www.economicsonline.co.uk/definitions/the-rise-of-microtransactions-in-video-games.html/>, accessed on April 16, 2024 (“A microtransaction refers to a small, optional, and one-off payment made within a game or application to buy virtual in-game or in-app items like upgrades, coins, or cosmetic enhancements. Microtransactions are used to improve the gaming experience of the players and offer them additional content beyond the base game.”).

¹⁰⁸ Bella Blondeau, “How Call of Duty does microtransactions right,” *The Gamer*, December 17, 2020, available at <https://www.thegamer.com/how-call-of-duty-does-microtransactions-right/>, accessed on December 8, 2023 (“That trend continues in Black Ops Cold War ... every bit of DLC in the store feels fair, and doesn’t come burdened with any gambling components whatsoever. There are no gacha pulls, no loot boxes, no nothing - just cosmetic kits and weapon blueprints being sold at a fair price.”).

¹⁰⁹ Steam Support, “Free to play games on Steam,” available at <https://help.steampowered.com/en/faqs/view/6285-A36E-8728-FED0>, accessed on December 8, 2023 (“Free to play games are available to download for free and can be played without a subscription or credit card. Your Steam wallet allows you to purchase items and content in-game to customize your gameplay if supported by the specific game.”).

¹¹⁰ Square Enix, “Monthly service fees,” available at <http://www.playonline.com/ff11us/envi/charge.html>, accessed on December 8, 2023 (“The FINAL FANTASY XI service requires a subscription fee”); Blizzard Entertainment, “World of Warcraft Free Trial,” available at <https://worldofwarcraft.blizzard.com/en-us/start>, accessed on December 8, 2023 (“A WoW subscription or non-recurring game time is required to play any characters above level 20. No subscription is required for characters between levels 1 and 20. Please note that some social features may be disabled if an active subscription expires.”).

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Game Pass allows users to access a downloadable library of titles on both consoles and PC.¹¹¹

53. Publishers decide which monetization strategies to use for each of their games. Consequently, publishers use many combinations of monetization strategies across their games.

2.1.4. Video game pricing: differentiated products and the role of demand elasticity

54. In this section I describe the core economic principles that drive price setting in industries with differentiated products such as video games. Product differentiation has important implications for the determinants of pricing. For example, Plaintiffs’ assumption that game prices should be lower on platforms with lower revenue shares—and that this decrease should be uniform across publishers—assumes that video game pricing depends solely on publishers’ costs.¹¹² However, economic theory indicates that, in markets with differentiated products, pricing is driven by both the cost structure and *demand elasticity*. Demand elasticity can be described as how responsive consumers are to price changes, or as one video game executive put it, how consumers feel about the price they are charged for a given good.¹¹³ As [REDACTED], CEO of [REDACTED], testified at his deposition, when pricing video games, demand elasticity (i.e., will “players [be] happy with the way they [are] charged” and will they “feel like they’re getting the right value”) is considered.¹¹⁴ Therefore, differences in costs from different revenue shares are not sufficient to determine how publishers set their prices. When

¹¹¹ Electronic Arts, “EA Play FAQ,” available at <https://www.ea.com/ea-play/faq>, accessed on December 8, 2023 (“EA Play is the ultimate gaming destination for anyone who loves EA games. EA Play gives you more of your favorite Electronic Arts titles. More rewards, more exclusive trials, and more discounts – all for just \$4.99 a month or \$29.99 a year! Here is what’s included: Unlock exclusive challenges and rewards, member-only content, early trials of new releases, and access to a library of top titles.”); Xbox, “Xbox Game Pass,” available at <https://www.xbox.com/en-US/xbox-game-pass>, accessed on January 25, 2024 (“Plus, enjoy hundreds of high-quality games solo or with friends on console, PC, or cloud.”).

¹¹² Complaint, ¶ 192 (“Thus, at a 12% commission, a game developer could lower its price by 20% and still earn more profit. And, of course, consumers would benefit through lower prices. This pricing scheme is blocked by Valve’s PMFN.”); Schwartz Report, ¶ 12 (“Absent the PMFN Policy, the lower commission rates would result in publishers passing through some savings from the lower commission rates to consumers in the form of lower game prices. Lower fees to publishers and lower prices to users result in a net lower price across the platform”).

¹¹³ Mankiw 2023, p. 344 (“Each firm in a monopolistically competitive market is, in many ways, like a monopoly. Because its product differs from those offered by other firms, its demand curve slopes down. (By contrast, a perfectly competitive firm faces a horizontal demand curve at the market price.) The monopolistically competitive firm follows a monopolist’s rule for profit maximization: It produces the quantity at which marginal revenue equals marginal cost and then uses its demand curve to find the price at which it can sell that quantity.”).

¹¹⁴ Deposition of [REDACTED] pp. 187 (“Q. So you said before you needed to know more than just the revenue, you needed to know how many people are playing the game. If you as a game developer are making a pricing decision, assuming all else is equal on these games, wouldn’t you price the game at a lower level to get more revenue and more customers playing the game? ... A. There’s way too many factors that go into how revenue is generated. And there’s way too many things that I care about aside from -- of course, from a strictly revenue standpoint, more revenue is better. But there’s -- like what was the business model? Is it a lasting revenue stream? What does the next 18 months look like? Do -- are players happy with the way they were charged? There’s so many different things that I would factor in and some -- and revenue is definitely not the dominating factor to me.”), 188–189 (“Q. (BY MR. RUBIN) [REDACTED] as a game developer, what considerations do you take into pricing a game? A. The profitability, there’s a certain cost of investment to develop the game, and, generally, want to make more than that cost in the long run. The value to customers that they’re receiving should feel like they’re getting the right value. And it’s -- it’s truly case-by-case specific. Like over the life span of a game, how we might price something might, for example, be dependent on if there’s a sequel in that series, could be advantageous to drop the price a lot before there’s a sequel so that more people are attracted and the game is fresh in mind to play the second one, for example. Q. You said one of the things you take into consideration is the cost of developing the game and recouping that cost; is that fair? A. Yes.”), 202 (“Q. Most of the time, if a consumer can buy something at \$16 versus buying the same thing at \$20, they will buy it at \$16 and the seller will sell more product at \$16 than it otherwise would have at \$20, correct? ... A. Probably. It depends on a lot of things. It also depends on the price elasticity of demand.”).

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publishers set prices, they also take into account the characteristics of consumers’ demand for video games and for gaming platforms and take these factors into account to varying degrees.

55. Both video games and gaming platforms are examples of differentiated products. As described in Section 2.1.2, video games possess many differentiating attributes such as genre, play style, and development budget. Industry analysts report that video game pricing is driven by consumer demand rather than input costs. That is, consumers’ preferences for game attributes affect publishers’ pricing decisions. One analyst describes publisher pricing behavior “less as ‘a supply-side thing’ and more driven by consumer demand and willingness to pay.”¹¹⁵
56. As described in Section 2.1.2, the set of platforms on which a game is available is another attribute of a game. Therefore, publishers will also consider consumers’ preferences for the different distribution platforms in their pricing decisions. As explained in Section 5.1.2, platforms differ in quality and features. Different quality and features can affect consumers’ “cross-platform elasticity”—that is, the extent to which consumers are willing to switch platforms for a given game if offered at different prices. Consumers who prefer their current platform’s features may be less likely to buy a game on a different platform just because it’s cheaper there. If many consumers see it that way, publishers will have less incentive to charge lower prices on lower-fee platforms because discounting may be insufficient to cause customers to switch.¹¹⁶ Publishers’ decisions on this front may vary game to game to reflect individualized factors such as how much the audience for a given game values a specific platform’s features.
57. Any reliable prediction of price setting in the video game industry must consider consumers’ preferences because of the differentiated nature of video games and gaming platforms, yet Plaintiffs fail to take this important economic principle into account. Instead, they assume that lower revenue shares necessarily imply lower video game prices and conclude that similarities in pricing of games on Steam and on competing stores is the result of Valve’s alleged conduct. Plaintiffs’ erroneous assertion that lower revenue shares lead to publishers uniformly charging lower prices on platforms with lower revenue shares is inconsistent with economic theory, the predictions of industry analysts, and with empirical evidence of how publishers set prices in practice. As discussed in Section 7.2.3, assessing harm from Valve’s alleged conduct requires an understanding of the demand conditions that each publisher faces.

¹¹⁵ Kyle Orland, “Steam’s ‘price parity rule’ isn’t wreaking havoc on game prices,” *Ars Technica*, May 13, 2021, available at <https://arstechnica.com/gaming/2021/05/why-lower-platform-fees-dont-lead-to-lower-prices-on-the-epic-games-store/>, accessed on December 8, 2023 (“But industry analysts see digital game pricing less as ‘a supply-side thing’ and more driven by consumer demand and willingness to pay. ‘I suspect that developers and publishers see no reason to pass [reduced storefront fees] on to consumers,’ F-Squared analyst Mike Futter told Ars. ‘Consumers believe that \$60 (soon \$70) is the fair market price because [development] costs went up.’”).

¹¹⁶ Wing Man Wynne Lam, “Switching Costs in Two-Sided Markets,” *The Journal of Industrial Economics*, 65(1), 2017, pp. 136–182 (“more patient consumers are less tempted by a temporary price cut because they understand that the price cut will later be followed by a price rise. Their demand therefore is less elastic, and platforms will respond by charging higher prices.”).

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2.2. Valve and Steam

58. Valve was founded in 1996. It began as a developer of popular games such as *Half-Life*, *Team Fortress Classic*, and *Counter-Strike 1.0* and later launched its digital platform Steam in 2003. In 2005, Valve became a digital distributor of not just its own games, but also third-party PC games through Steam.¹¹⁷ Later on, Valve also ventured into PC gaming hardware with products such as the Steam Controller, Valve Index VR headset, and the Steam Deck, a portable handheld gaming PC.¹¹⁸
59. In its early years, Valve was a game developer, selling physical copies of its games through agreements with publishers.¹¹⁹ When users purchased physical discs, they would insert the discs into a PC and install the version of the game from that disc. Users would commonly be prompted to enter a “key” code that came with the CD, upon which they would be able to launch the game.¹²⁰ Without access to a platform such as Steam, users would need to search for and download any updates or “patches” for the game (i.e., sets of changes to a game designed to fix errors or compatibility problems or update game rules). This could lead to inconsistent user experiences that varied by which version of the game a user was playing, as well as incompatibilities between users when attempting to play multiplayer games.¹²¹
60. Valve sought to remedy these problems by introducing Steam in 2003. Initially, Valve used Steam to issue patches and updates to Valve games sold on physical discs.¹²² Valve

¹¹⁷ Jeff Dunn, “Full Steam ahead: The History of Valve,” *GamesRadar+*, October 4, 2013, available at <https://www.gamesradar.com/history-of-valve/>, accessed on December 7, 2023 (“But by the summer 1996, Newell was looking for a change. So by that August, he and his fellow co-worker/millionaire Mike Harrington took their fortunes and used them to start their own gaming company. They called it Valve, LLC, and ... they got started on their first game: *Half-Life* ... and released *Counter-Strike 1.0* in an official capacity [in 2000] ... When [Steam] launched [in 2003] ... In 2005, Valve made its first set of distribution agreements with third-party publishers, allowing it to diversify Steam’s game catalogue beyond its own titles.”).

¹¹⁸ Mike Mahardy, “GDC 2015: Valve Announces Steam Controller Launch Window, Price,” *IGN*, July 14, 2016, available at <https://www.ign.com/articles/2015/03/04/gdc-2015-valve-announces-steam-controller-release-date-price>, accessed on December 7, 2023 (“Valve’s Steam controller will be available in the U.S. this November, along with the newly announced Steam Link service.”); Stefan Etienne and Sean Hollister, “Valve just surprise revealed its own VR headset called the Valve Index,” *The Verge*, March 29, 2019, available at <https://www.theverge.com/2019/3/29/18287734/valve-index-virtual-reality-vr-headset-may-2019-reveal-announcement/>, accessed on December 7, 2023 (“Valve has surprise launched a teaser site featuring a brand-new virtual reality headset, called the Valve Index”); Mitchell Clark, “Valve will start selling the Steam Deck on February 25th,” *The Verge*, January 26, 2022, available at <https://www.theverge.com/2022/1/26/22902930/valve-steam-deck-release-date-gaming-handheld-pc/>, accessed on December 7, 2023 (“Valve announced that the Steam Deck will go on sale starting February 25th ... It’s good to finally have a date for when the handheld console will be coming out.”).

¹¹⁹ Valve released its first video game, *Half-Life*, in November 1998. See Valve, “About Us,” available at <https://www.valvesoftware.com/en/about>, accessed on December 8, 2023 (“Valve’s debut title, *Half-Life*, was released in 1998.”).

¹²⁰ EA Help, “Install your game using a disc,” May 22, 2023, available at <https://help.ea.com/en/help/origin/origin/installing-your-game-disc-through-origin-with-a-new-account>, accessed on December 7, 2023 (“Enter your game code ... Insert your game disc into your computer’s disc drive ... Click Install”).

¹²¹ Jeff Dunn, “Full Steam ahead: The History of Valve,” *GamesRadar+*, October 4, 2013, available at <https://www.gamesradar.com/history-of-valve/>, accessed on December 7, 2023 (“Steam was first unveiled at GDC 2002. When it launched a year later, it was far from the all-encompassing behemoth that we know it as today. In fact, it was first posited as a simple digital distribution surface whose main purpose was to deliver patches and other updates to online games more easily. Before, said patches had a nasty habit of crashing games like *Counter-Strike* and rendering them unplayable for days at a time.”).

¹²² Valve first launched Steam as a command line beta in 2002, then with a full user interface beta in early 2003, and officially released to users on September 12, 2003. See Matt Sayer and Tyler Wilde, “The 19-year evolution of Steam,” *PC Gamer*, September 12, 2022, available at <https://www.pcgamer.com/steam-versions/>, accessed on December 6, 2023 (“On September 12, [2003,] Steam began life as a way for Valve to control the patching process for games like *Counter-Strike*, as well as curb cheating and provide easier access to any content the developer produced.”); GDC Vault, “Redefining the Business of Game Development,” March 21, 2002, available at <https://gdcvault.com/play/1022548/Redefining-the-Business-of-Game>, accessed on April 23, 2024 (“And lastly one of the advantages to operating in this kind of distributed environment is that customers stop

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also used Steam to host multiplayer games and deploy software to prevent cheating in those multiplayer games.¹²³ At launch, there was no way to purchase games on Steam.¹²⁴

61. Steam became a digital software platform (i.e., Steam became a *first-party* platform) when Valve began selling its own games directly on Steam in 2004. Alongside a physical retail release, *Counter-Strike: Condition Zero* became the first game to be sold directly by Valve for download through Steam.¹²⁵ Valve generated revenue directly from digital sales of the game through Steam, in addition to its sales of physical discs through a third-party publisher.
62. In late 2004, Valve released the sequel to its first game. *Half-Life 2* was available for purchase on Steam as well as on physical discs. Users needed to download Steam to play *Half-Life 2* even if they bought the game on a physical disc, which was how most users bought video games then.¹²⁶ By launching the game from Steam, players were able to take advantage of several procompetitive benefits offered by the platform, such as access to patches and updates to the game, multiplayer capabilities, and anti-cheating software.¹²⁷ Valve began offering third-party games on Steam in 2005 (i.e., Steam

worrying about updates. If I have some new piece of content, some new piece of code, I put it onto a resource server which replicates it automatically to all my, to all my customers. They don't have to do anything. You may tell them about it because there's something cool like you're giving them some new level or some new skin, but the main thing is that they don't have to worry about it at all. The whole process of patching and updating is now transparent to them.”).

¹²³ Jeff Dunn, “Full Steam ahead: The History of Valve,” *GamesRadar+*, October 4, 2013, available at <https://www.gamesradar.com/history-of-valve/>, accessed on December 7, 2023 (“it could host multiplayer games and deploy anti-cheating software”); GDC Vault, “Redefining the Business of Game Development,” March 21, 2002, available at <https://gdcvault.com/play/1022548/Redefining-the-Business-of-Game>, accessed on April 23, 2024 (“One of the things our customers especially are interested in is the ability to see when their friends are playing, get together with friends and jump into a server. So, we came to the conclusion that we needed to build a bunch of instant messaging pieces on both the client and implementing a backbone to support that. Their browsers to find content, to find your friends, to find content servers, their set of configuration tools. Just a package of tools that other developers might find useful when they're operating in a broadband environment. And one of the interesting things about working in a distributed environment, is that it's really hard to pirate the system or compromise the system because there's never a case where a client has all of those bits. They sort of live in this cloud between you know, the customer's PC and a set of back-end services. And it's your code running on the client talking to your code running on physically secure servers so just makes it, you know it's an inherently difficult to pirate configuration.”).

¹²⁴ Matt Sayer and Tyler Wilde, “The 19-year evolution of Steam,” *PC Gamer*, September 12, 2022, available at <https://www.pcgamer.com/steam-versions/>, accessed on December 6, 2023 (“In the image above, Steam's narrow focus is immediately evident: The only games mentioned are Valve's own, and there is no way to purchase them from the site. The Steam client itself lacks a storefront, focusing entirely on connecting players rather than getting them spending.”); GDC Vault, “Redefining the Business of Game Development,” March 21, 2002, available at <https://gdcvault.com/play/1022548/Redefining-the-Business-of-Game>, accessed on April 23, 2024 (“And at that point they'll have the commerce pieces so they can buy any of our products they haven't already bought. It will give them access to this new user interface that you saw; they'll be able to start using the instant messaging to set up tournaments and manage their plans. And there's also some anti-cheat technology we've been building on top of Steam. That's going to be really interesting and it's going to help us work through a lot of scalability issues.”).

¹²⁵ Steve Butts, “Counter-Strike: Condition Zero Review,” *IGN*, March 23, 2004, available at <https://www.ign.com/articles/2004/03/24/counter-strike-condition-zero-review>, accessed on December 7, 2023 (“Counter-Strike: Condition Zero has finally arrived on store shelves (and Steam servers, by the way).”); Trey Walker, “Sierra picks up Counter-Strike: Condition Zero,” *GameSpot*, May 17, 2006, available at <https://www.gamespot.com/articles/sierra-picks-up-counter-strike-condition-zero/1100-2847364/>, accessed on December 7, 2023 (“[Sierra Entertainment] will ship Valve's team-based shooter in the second quarter of 2002.”).

¹²⁶ Matt Sayer and Tyler Wilde, “The 19-year evolution of Steam,” *PC Gamer*, September 12, 2022, available at <https://www.pcgamer.com/steam-versions/>, accessed on December 6, 2023 (“To play the universally-acclaimed shooter, you had to sign up for Steam, even if you bought it in a box at the store. It was a landmark moment in the transition from the old model of digital ownership—CDs and CD keys—to the new one, where game licenses are tied to online accounts.”).

¹²⁷ Matt Sayer and Tyler Wilde, “The 19-year evolution of Steam,” *PC Gamer*, September 12, 2022, available at <https://www.pcgamer.com/steam-versions/>, accessed on December 6, 2023 (“On September 12, [2003,] Steam began life as a way for Valve to control the patching process for games like Counter-Strike, as well as curb cheating and provide easier access to any content the developer produced.”); Jeff Dunn, “Full Steam ahead: The History of Valve,” *GamesRadar+*, October 4, 2013,

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became a *third-party* platform).¹²⁸ That year, *Ragdoll Kung Fu* and *Darwinia* became the first non-Valve-developed games made available for sale on Steam. Valve’s agreements with the developers of those games set Valve’s revenue share at [REDACTED] percent.¹²⁹ The library of games available on Steam grew to almost 100 titles by the end of 2006.¹³⁰

63. In the first several years after Steam’s launch, many successful games that Valve added to Steam were modifications of existing games or “mods” made by fans. Mods modify the existing content in a game and can range from changes that implement quality of life fixes—such as a more intuitive user interface—to entirely new gameplay experiences.¹³¹ *Counter-Strike* was first developed as a mod for *Half-Life* in 1999, and then it was subsequently acquired and released by Valve as a full game in 2000.¹³² Valve formally embraced the “modding community” with the launch of Steam Workshop in 2011, which allows users to distribute user-created mods directly on Steam.¹³³ This is an

available at <https://www.gamesradar.com/history-of-valve/>, accessed on December 7, 2023 (“[Steam] could host multiplayer games and deploy anti-cheating software”). Rather than acknowledge these procompetitive benefits, Plaintiffs and Dr. Schwartz argue that the requirement that users install Steam is evidence that Valve had monopoly power. See Complaint, ¶¶ 49–50 (“But regardless of where the game was purchased, Valve required the Steam platform to be installed on the user’s PC to play *Half-Life 2*—customers could not play the game unless they created a Steam account and installed Steam on their PC. Users that purchased the game using traditional distribution channels were provided with codes they could submit to Steam to add *Half-Life 2* to their libraries. Through this ‘[f]orced adoption’ to play *Half-Life 2*, Valve started to build its ‘stranglehold on the PC gaming market.’”). Dr. Schwartz asserts that Valve changed “the terms and conditions” under which users could play the game, requiring customers “to become Steam users in order to play” and by so doing displaying “evidence of market power.” See Deposition of Steven Schwartz, April 18, 2024 (“Schwartz Deposition”), pp. 174–175. However, according to Valve employee Erik Johnson, Valve did not change the terms of sale and instead printed “Internet connection required” on the outside of the box and enclosed an insert clearly disclosing that a “Steam account is required to play *Half-Life 2*.” Declaration of Erik Johnson, May 17, 2024 (“The outside of the *Half-Life 2* box [from 2004] tells buyers of the game that an Internet connection is required for the game. ... The Quick Reference Card insert also says that an Internet connection is required and explains, ‘A Steam account is required to play *Half-Life 2* and an Internet connection is required to create and use your Steam account.’”). Regardless, Plaintiffs’ claim that Valve was able to exercise monopoly power with Steam at launch due to the popularity of *Half-Life 2* is at odds with empirical evidence. There were many other commercially successful games before, during, and after the launch of *Half-Life 2* in 2004. Data on physical units sold per year show that *Half-Life 2* was only the 92nd most popular game in 2004 in terms of units sold, behind games including *The Sims 2*, *Doom 3*, and *World of Warcraft*. *Half-Life 2* was the 93rd most popular game in 2005 in units sold. *Half-Life 2* was the 49th highest revenue game in 2004, and the 59th highest revenue game in 2005. If I conservatively include units sold and revenues made on Steam, I find that *Half-Life 2* was the 52nd most popular game in terms of units sold and the 29th highest revenue game in 2004. And in 2005 *Half-Life 2* was the 75th most popular game in terms of units sold and the 41st highest revenue game. See *Workpaper 7*.

¹²⁸ Steam, “Thank you for 20 Years of Steam!” available at https://store.steampowered.com/sale/steam20#SaleSection_74421, accessed on April 18, 2024 (“Valve launches Day of Defeat: Source on September 26th. Just a few weeks later, Rag Doll Kung Fu is the first third-party game distributed on Steam.”).

¹²⁹ Valve [REDACTED] data, VALVE_ANT_1589683.

¹³⁰ Matt Sayer and Tyler Wilde, “The 19-year evolution of Steam,” *PC Gamer*, September 12, 2022, available at <https://www.pcgamer.com/steam-versions/>, accessed on December 6, 2023 (“By the end of [2006], there are almost 100 games available on Steam.”).

¹³¹ Christopher Livingston, “A beginner’s guide to mods,” *PC Gamer*, November 9, 2022, available at <https://www.pcgamer.com/a-beginners-guide-to-mods/>, accessed on December 7, 2023 (“Mods can do something small: fix a bug, correct a typo in on-screen text, add a new item of clothing for your character, adjust how a weapon works, and a million other little tweaks and chances. Mods can also be massive projects, completely transforming how a game looks or functions, and can provide all new quests, adventures, and in-game systems.”).

¹³² Jeff Dunn, “Full Steam ahead: The History of Valve,” *GamesRadar+*, October 4, 2013, available at <https://www.gamesradar.com/history-of-valve/>, accessed on December 7, 2023 (“Many, many *Half-Life* mods—and fuller games that started as *Half-Life* mods—were churned out during this period, including *Deathmatch Classic*, *Ricochet*, *Gunman Chronicles* and *Day of Defeat*. The most successful of the bunch, though, was a multiplayer mod dubbed *Counter-Strike*. Developed by Minh Le and Jess Cliffe, the tactical shooter was first released in beta form in 1999, and gained a sizable audience right away. Valve took note, hired the two devs, and released *Counter-Strike 1.0* in an official capacity a year later.”).

¹³³ Steamworks, “Steam Workshop,” available at <https://partner.steamgames.com/doc/features/workshop>, accessed on December 7, 2023 (“The Steam Workshop is designed as a place for your fans and community members to participate in the

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example of how Valve continues to build new consumer-facing features into Steam. I discuss other examples of how Valve continually improves and adds features to Steam in Section 5.

64. Valve has also continually introduced publisher-facing innovations to Steam since its launch, including the ability to distribute games through “**Steam keys**.” Steam keys are digital codes that allow a user to download and launch a game on Steam (what Plaintiffs describe as “Steam-enabled” games).¹³⁴ Every publisher who offers a game on Steam can request 5,000 Steam keys from Valve for that game at the time of launch. After the initial issuance of 5,000 keys, Valve will review Steam key requests on a case-by-case basis.¹³⁵ The publisher can then sell those keys on other platforms, or give them to reviewers or influencers, and users who buy or receive them can launch their games on Steam from then on.¹³⁶ Valve issues Steam keys to publishers for their games for free. Once a user redeems a Steam key, the game’s functionality on Steam is the same as if the consumer had bought the game directly on Steam.¹³⁷
65. In the early years of Steam, Valve primarily competed with physical video game retailers, which accounted for a much larger part of video game consumer spending than Steam.¹³⁸ Valve competed with physical retailers by offering lower fees and freeing publishers from the costs of distributing to stores, delivering updates, and paying for in-store marketing and product placement. This gave publishers increased pricing flexibility, along with support for updating, matchmaking of players (i.e., connecting players for multiplayer gaming sessions), and other procompetitive benefits.¹³⁹ Valve

creation of content for your game. The form of this creation by community members can vary depending on the nature of the game and what kind of control you wish to have over the content in your game.”); Matt Sayer and Tyler Wilde, “The 19-year evolution of Steam,” *PC Gamer*, September 12, 2022, available at <https://www.pcgamer.com/steam-versions/>, accessed on December 6, 2023 (“2011: Steam Workshop is introduced.”).

¹³⁴ Expert Report of Professor Joost Rietveld, February 8, 2024 (“Rietveld Report”), ¶ 128 (“Steam Keys provided Valve a means of offering Steam-enabled games through other non-Steam channels as well”).

¹³⁵ Steamworks, “Steam Keys,” available at <https://partner.steamgames.com/doc/features/keys>, accessed on April 18, 2024 (“Games and applications launching on Steam may receive up to 5,000 Default Release Steam Keys to support retail activities and distribution on other stores. After that, all Steam Key requests are reviewed on a case-by-case basis.”).

¹³⁶ Popular stores that sell Steam keys are Humble Bundle, Green Man Gaming, and Fanatical. See Wes Fenlon and Tyler Wilde, “PC game storefronts compared: what you need to know about retailers and resellers,” *PC Gamer*, July 12, 2019, available at <https://www.pcgamer.com/pc-game-storefronts-compared-what-you-need-to-know-about-retailers-and-resellers/>, accessed on December 7, 2023 (“Here are a few of the bigger key retailers: Humble, Fanatical, Green Man Gaming”); Steamworks, “Steam Keys,” available at <https://partner.steamgames.com/doc/features/keys>, accessed on April 18, 2024 (“Steam Keys are single-use, unique, alphanumeric codes that customers can activate on Steam to add a product license to their account. Steam Keys are a free service we provide to developers as a convenient tool to help you sell your game on other stores and at retail”).

¹³⁷ Deposition of Eric Peterson, 30(b)(6) (Valve), November 15, 2023, p. 40 (“Steam Keys can be redeemed on Steam by customers and they receive the same bandwidth and services as customers who purchase a license on Steam.”).

¹³⁸ In total, from March 2004 (when consumers could first purchase games on Steam) through February 2007, consumers spent ██████████ on Steam. Over the same period, consumers spent ██████████ on physical PC and console games. See Workpaper 8.

¹³⁹ The revenue cut publishers ultimately received from physical sales was often substantially lower than from sales on Steam. Even though physical distributors generally charged a 30 percent revenue share, publishers who distributed games through physical retailers also had to cover the costs of manufacturing the physical media, the costs associated with any changing prices, and licensing fees associated with distributing media for certain devices. In addition, physical retailers needed to recoup overhead costs driven by leases for physical storefronts and wages for retail employees. Because of these different cost structures between physical and digital distribution, publishers could price their games more flexibly on Steam than at physical retailers. The average price for a game on Steam from 2004 to 2022 was \$8.76, while the price for the average physical PC game at the same time was \$24.22. See Workpaper 9; Tom Marks, “Report: Steam’s 30% Cut Is Actually the Industry Standard,” *IGN*, January 13, 2020, available at <https://www.ign.com/articles/2019/10/07/report-steams-30-cut-is-actually-the-industry-standard>, accessed on May 6, 2024 (“Additionally, physical retailers generally stick to a 30% cut too, but keep in mind that publishers often have to invest more themselves to pay for the process of manufacturing the physical media alongside other fees

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introduced Steam keys as one way to deliver these benefits.¹⁴⁰ Professor Rietveld acknowledges this competition with physical retailers in his report, stating that “Steam’s new functional features, extensive catalog, and convenient delivery method helped Steam compete against brick-and-mortar distributors on the consumer side of the market, while on the developer/publisher side, the low marginal cost of publishing digital games and the growing user base made selling games on Steam easier and more attractive than selling games through brick-and-mortar channels.”¹⁴¹

66. While physical distribution of video games historically played an important role, it was in part due to these benefits of digital distribution to publishers and consumers that the video gaming industry in general—and the PC and console gaming industry in particular—transitioned from mostly physical distribution to mostly digital distribution since the launch of Steam in 2003. In 2009, 80 percent of games in the U.S. were sold on physical media such as a CD/DVD, but by 2018, this proportion had reversed, with more than 80 percent of games being sold digitally including physical sales of download codes.¹⁴²
67. While Valve was important to the growth of digital distribution, it was not the first platform. At least three first-party platforms launched in or before 2004, before Steam became a first-party platform, including platforms for *Everquest*, *Final Fantasy XI*, and

not present in digital distribution.”); Matt Sayer and Tyler Wilde, “The 19-year evolution of Steam,” *PC Gamer*, September 12, 2022, available at <https://www.pcgamer.com/steam-versions/>, accessed on December 6, 2023 (“Steam began life as a way for Valve to control the patching process for games”); Jeff Dunn, “Full Steam ahead: The History of Valve,” *GamesRadar+*, October 4, 2013, available at <https://www.gamesradar.com/history-of-valve/>, accessed on December 7, 2023 (“[Steam] could host multiplayer games”); AccelByte Inc., “Matchmaking Essentials for Cross-Platform Multiplayer Games,” *Medium*, March 1, 2021, available at <https://medium.com/accelbyte-inc/matchmaking-essentials-for-cross-platform-multiplayer-games-20fd767554dd>, accessed on May 8, 2024 (“Matchmaking is the core of any multiplayer game. It is the system that connects a player with the other players and enables them to play together, whether as individuals or in a team.”). In a 2002 GDC presentation, Gabe Newell commented on the lower setup time of digital versus physical games, another example of a procompetitive benefit offered by Valve to compete with physical retailers. See GDC Vault, “Redefining the Business of Game Development,” March 21, 2002, available at <https://gdcvault.com/play/1022548/Redefining-the-Business-of-Game>, accessed on April 23, 2024 (“We’ve created new games, new mods, new models, new maps, and that’s really helped us build-up that audience but unfortunately, it’s really compromising the out-of-box experience for a retail packaged goods customer. If you go into a store and buy a copy of Half-Life, put it in your CD player, you’re 50 minutes away from being in that game.”).

¹⁴⁰ Valve introduced Steam keys as a way to keep games up to date and so publishers could sell Steam-enabled versions of their games in retail stores. See Valve Corporation’s Supplemental Responses and Objections to Plaintiffs’ Second Set of Interrogatories, *In Re Valve Antitrust Litigation*, July 5, 2023, p. 6 (Interrogatory No. 14: “Valve initially created Steam Keys to allow people who bought Valve games in a box to have access to Steam services. Among other things, Steam allows games to be easily kept up to date, so everyone who plays it has the same version—a must for multiplayer games. When Steam Partners began to sell games on Steam, Valve gave Steam Keys to those Partners for similar reasons, including to support their sales efforts in brick-and-mortar retailers and allow their customers to use Steam to keep their games up to date”).

¹⁴¹ Rietveld Report, ¶ 127.

¹⁴² J. Clement, “Distribution of computer and video game sales in the United States from 2009 to 2018, by delivery format,” *Statista*, May 2019, available at <https://www.statista.com/statistics/190225/digital-and-physical-game-sales-in-the-us-since-2009/>, accessed on April 23, 2024 (“In 2018, a record 83 percent of all computer and video games were sold in digital form, meaning that, once the game is downloaded, it is immediately ready to play. In contrast, only 17 percent of video games were sold in physical form. This is a dramatic turnaround from less than a decade earlier, when 80 percent of video games were sold as physical copies.”); GDC Vault, “Redefining the Business of Game Development,” March 21, 2002, available at <https://gdcvault.com/play/1022548/Redefining-the-Business-of-Game>, accessed on April 23, 2024 (“Outside of the United States there’s a cyber cafe phenomenon. Most people don’t really grasp how big it is in a lot of countries in Asia. So, in a lot of those places, a lot of those countries, the retail revenue’s actually a lot smaller than the revenue that’s being generated by those cyber cafes ... This is the beginning of the shift of PC games from a retail package goods business to an online digitally distributed business”).

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games developed by Stardock.¹⁴³ In addition, media conglomerate IGN launched a third-party platform, Direct2Drive, in 2005 before Steam became a third-party platform.¹⁴⁴ Another, GamersGate, launched in the following year.¹⁴⁵ At Steam’s launch, Valve had to compete with physical retailers as well as first-party and third-party platforms. As digital publishing grew, numerous competitors entered the video game distribution industry, including Epic Games, Ubisoft, EA, Activision Blizzard, CD Projekt, itch.io, Discord, Amazon, Green Man Gaming, and Humble Bundle, Inc.; I discuss these competitors further in Section 2.3.

68. In sum, Valve has a history of innovation both as a developer and as a distributor of games with Steam. There were other digital distributors at the time of Steam’s launch, but Valve’s innovations were a major factor in helping industry participants obtain the procompetitive benefits of digital distribution. Plaintiffs’ experts both acknowledge the importance of Steam in the transition to digital distribution, with Professor Rietveld noting that Steam is “often credited as paving the way for the transition to digital distribution in the PC video game industry.”¹⁴⁶ Steam continues to outpace competitors with its feature-rich offerings, as discussed in detail in Section 5.

¹⁴³ Sony Online Entertainment, “Sony Online Entertainment’s EverQuest Celebrates Its Fifth Year and Over 2.5 Millions Units Sold Worldwide,” March 15, 2004, available at https://www.sony.com/content/sony/en/en_us/SCA/company-news/press-releases/sony-online-entertainment/2004/sony-online-entertainments-everquest-celebrates-its-fifth-year-and-over-25-million-units-sold-worldwide.html, accessed on December 6, 2023 (“Since its launch on March 16, 1999, EverQuest and its expansions have sold over 2.5 million copies worldwide and continues to be one of the gaming industry’s biggest and most influential titles”); Stephanie Chang, “Celebrating Final Fantasy XI Online: A 20th anniversary retrospective with the game’s creators,” *PlayStation.Blog*, May 27, 2022, available at <https://blog.playstation.com/2022/05/27/celebrating-final-fantasy-xi-online-a-20th-anniversary-retrospective-with-the-games-creators/>, accessed on December 6, 2023 (“To be able to say that we’ve continued to provide service for players around the world since May 16, 2002 is a remarkable achievement for us and we’ve been so happy to celebrate this moment with you all.”); Gabe Wollenburg, “Square Announces Pay-Online Play Online,” *RPGamer*, available at <https://web.archive.org/web/20130202144831/http://www.rpgamer.com/news/Q3-2000/071800a.html>, accessed on December 6, 2023 (“Square Co. has announced that its network service, Play Online, will be fee based. That means that, at least in Japan, the highly anticipated Final Fantasy XI experience will be a pay-for-play situation.”). Galactic Civilizations was launched simultaneously on Stardock Central and at retail. See Brad Wardell, “Postmortem: Stardock’s Galactic Civilizations,” *Gamasutra*, May 7, 2003, available at https://web.archive.org/web/20220704210359/http://www.gamasutra.com/view/feature/2862/postmortem_stardocks_galactic.php?page=3, accessed on December 6, 2023 (“Unfortunately, when the game shipped on March 26, Stardock Central wasn’t quite ready. Stardock Central not only had to deal with people downloading the full 500 megabyte game from the Internet, it also had to deal with people who bought the game at retail.”).

¹⁴⁴ IGN, “IGN Entertainment Launches Direct2Drive,” June 16, 2012, available at <https://www.ign.com/articles/2004/09/10/ign-entertainment-launches-direct2drive>, accessed on December 6, 2023 (“IGN Entertainment today [in 2004] announced the launch of Direct2Drive, the company’s always-open digital retail store.”); Simon Carless, “News Corp to Acquire IGN Entertainment for \$650 Million,” *Game Developer*, September 7, 2005, available at <https://www.gamedeveloper.com/game-platforms/news-corp-to-acquire-ign-entertainment-for-650-million>, accessed on May 1, 2024 (“IGN Entertainment also owns digital game download service Direct2Drive”).

¹⁴⁵ GlobeNewswire, “Paradox Interactive Launches Large-Scale International Digital Distribution Service,” November 20, 2006, available at <https://www.globenewswire.com/news-release/2006/11/20/351416/109087/en/Paradox-Interactive-Launches-Large-Scale-International-Digital-Distribution-Service.html>, accessed on December 8, 2023 (“Paradox Interactive, a recognized worldwide publisher of PC strategy games, announced today the launch of their latest venture, the digital distribution platform Gamer’s Gate. Gamer’s Gate has serviced gamers as a trial version since April 2006”).

¹⁴⁶ Rietveld Report, ¶ 26 (“Though it was not the first digital video game distribution platform, the emergence of Steam, which began offering third-party PC games in 2005, and improvements to high-speed internet are often credited as paving the way for the transition to digital distribution in the PC video game industry.”); Schwartz Report, ¶ 19 (“In 2001, the first such competitor, Stardock, released Stardock Central, the first digital distribution platform. However, it wasn’t until Valve’s transition to digital distribution with the launch of Steam in 2003 and its release of Half-Life 2 the following year that users began to widely utilize digital distribution.”).

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2.3. Industry participants and distribution platforms

69. Thousands of firms, differing widely in size and roles, participate in the video gaming industry.¹⁴⁷ The majority of firms are small, independent developers, which can be as small as one person.¹⁴⁸ At the other end, there are a few large companies with hundreds or thousands of employees. These large firms are sometimes vertically integrated and operate as developers, publishers, and distributors.¹⁴⁹
70. Large firms account for the majority of consumer spending in the global PC, console, and mobile video gaming industry.¹⁵⁰ Exhibit 1 presents the 10 largest public companies by consumer spending. The largest grossing of these firms is [REDACTED], which accounted for [REDACTED] in consumer spending in 2022. Together, the firms in this exhibit were responsible for nearly [REDACTED] consumers spent on video games in 2022.¹⁵¹

¹⁴⁷ For example, there were 29,654 active publishers on Steam alone in 2022. Active publishers are publishers who experienced sales or returns on Steam according to revenue data produced by Valve. See Workpaper 10.

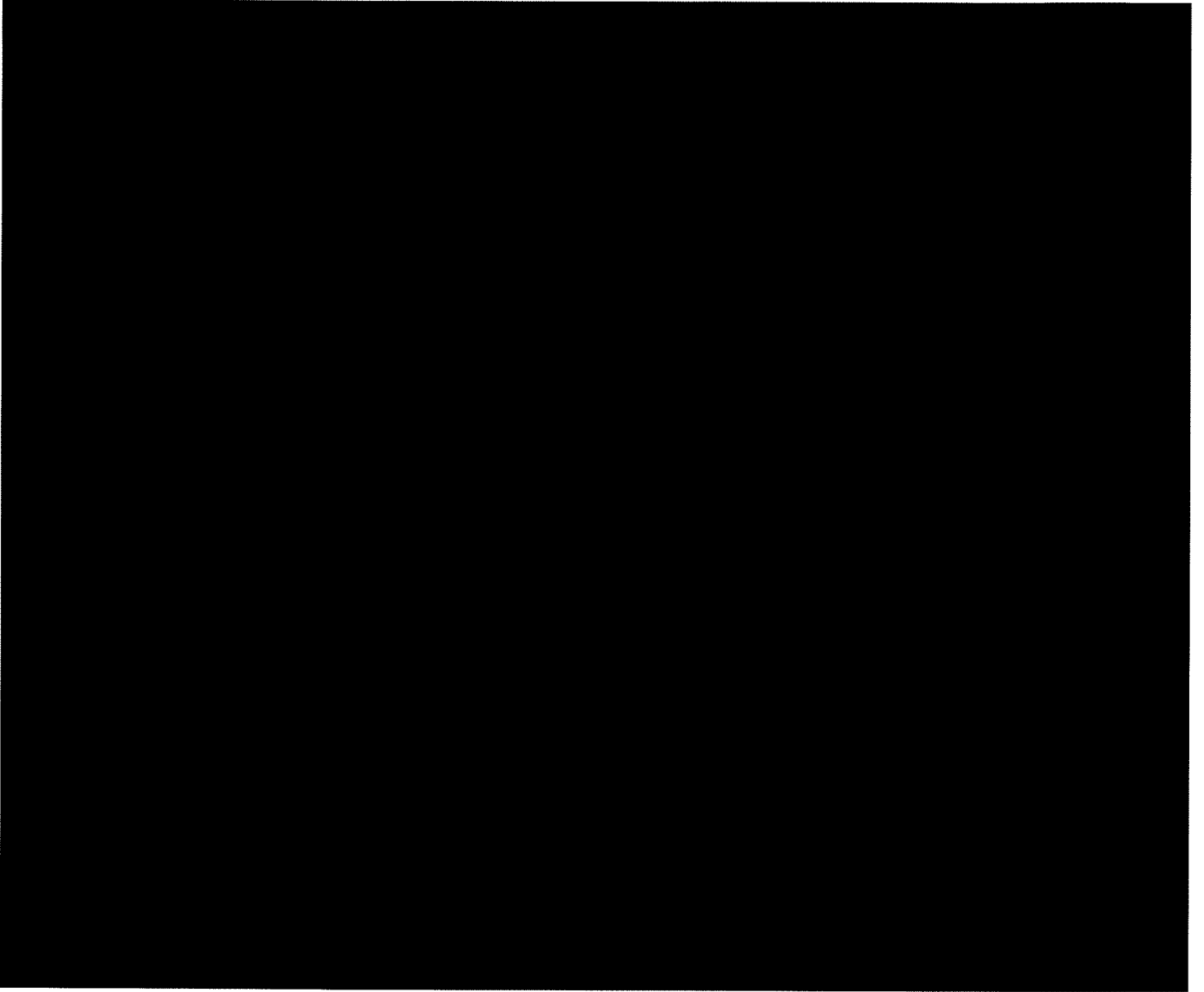
¹⁴⁸ To illustrate, in 2021, there were approximately 31,000 independent game developers in the United States alone. See Gamescrye, “In 2022 Is the Indie Video Game Market Oversaturated?” January 31, 2023, available at <https://gamescrye.com/blog/in-2022-is-the-indie-video-game-market-oversaturated/>, accessed on December 6, 2023 (“In 2021, it was estimated that there were approximately 31,000 independent game development studios in the United States alone, and this number is expected to continue to grow in the coming years.”); Kaavya Karthikeyan, “Indie Games: Everything You Need to Know,” *Gameopedia*, January 17, 2022, available at <https://www.gameopedia.com/indie-games-everything-you-need-to-know/>, accessed on April 25, 2024 (“[An indie game] is a video game that’s usually made by smaller development teams or even individuals on their own without financial or technical support from large game publishers.”).

¹⁴⁹ Tomas Zegarra, “Game Developers vs Game Publishers: What’s the difference?” *HP*, July 19, 2020, available at <https://www.hp.com/us-en/shop/tech-takes/game-developers-vs-game-publishers>, accessed on December 7, 2023 (“Large-scale developers field hundreds, if not thousands, of employees across the world working on different games for multiple platforms ... Companies like Riot, Epic, and Blizzard have been able to expand on their success to become a hybrid publisher/developer ... Many publishers use dedicated launchers or game stores to showcase homegrown games or games of other companies that they have negotiated deals with.”).

¹⁵⁰ Here, and in the remainder of my report, I refer to revenues as consumer spending on game-related revenues (i.e., excluding video game hardware spend, taxes, business-to-business services, etc.). Revenues considered are gross revenues unless otherwise stated.

¹⁵¹ The total consumer spending in 2022 of [REDACTED]. This includes worldwide revenues in all segments (PC, console, and mobile) and all “breakdowns” (digital full-game, boxed full-game, in-game, and subscription). See Exhibit 1 backup materials. I discuss Newzoo data in Appendix Section 16.

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71. These large firms are established in countries around the world and generally play multiple roles in the video gaming industry. Total sales net of taxes and returns on Steam in 2022 are [REDACTED], which would place it between [REDACTED] and [REDACTED] on the figure above.¹⁵² In other words, if Valve had been a public firm, it would have been ranked only [REDACTED] among public firms. Below, I discuss each of these leading public firms and their role in the video gaming industry.
- a. **Tencent** is a Chinese company that operates the first- and third-party WeGame and WeGame X PC software platforms and holds stakes in several developers and publishers. It has full ownership of Riot Games, a developer and publisher that

¹⁵² Workpaper 11.

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distributes its own games through its own first-party launcher and publishes *League of Legends*. Tencent also holds a 40 percent stake in Epic Games.¹⁵³

- b. **Sony** is a Japanese developer, publisher, and distributor that manufactures PlayStation consoles and operates the PlayStation Store, a software platform for PlayStation consoles. Sony develops games (e.g., *The Last of Us*) for both PlayStation consoles and PCs through its game development studios.¹⁵⁴
- c. **Apple** is a U.S. distributor that operates the App Store software platform for Apple devices. It distributes game software applications to users of Apple devices.¹⁵⁵
- d. **Microsoft** is an American developer, publisher, and distributor that manufactures Xbox consoles and operates the Microsoft Store, a digital third-party PC and Xbox software platform.¹⁵⁶ Microsoft also operates the Xbox App for PC, which is a PC platform providing social features and allowing users to launch games purchased through the Microsoft Store.¹⁵⁷ It develops games (e.g., *Minecraft*, which runs on a first-party platform that launched prior to Microsoft acquiring its developer, Mojang, in 2014) for PC and Xbox consoles through its game development studios.¹⁵⁸

¹⁵³ Ian Boudreau, “Tencent has launched the global version of WeGame,” *PCGamesN*, April 7, 2019, available at <https://www.pcgamesn.com/tencent-launches-wegame-x>, accessed on December 7, 2023 (“Like most people, you may have missed the fact that Chinese gaming giant Tencent launched the global version of its games distribution platform WeGame, called WeGame X, this week ... Tencent is viewed with some suspicion by gamers outside of China, and the notion that the company shares user data with the Chinese government has animated a lot of the ire directed toward Epic Games Store exclusivity deals, as Tencent owns a 40% stake in the company.”); Khee Hoon Chan, “A closer look at Tencent, the world’s biggest game company,” *Polygon*, March 2, 2022, available at <https://www.polygon.com/22949530/tencent-the-worlds-biggest-video-game-company>, accessed on December 7, 2023 (“Riot Games’ *League of Legends*, a game that is now Tencent’s flagship PC game in China, and whose studio was also completely bought out by Tencent, with the firm finalizing its purchase of Riot Games in 2015.”); Riot Games, “Riot Client Game Hubs,” October 9, 2023, available at <https://www.riotgames.com/en/news/riot-client-game-hubs>, accessed on April 25, 2024 (“Now with tens of millions of players launching games through Riot Client monthly, we’ve made changes to better surface the most exciting and relevant content to serve your needs.”).

¹⁵⁴ Sony Interactive Entertainment, “About Us,” available at <https://sonyinteractive.com/en/about-us/>, accessed on December 7, 2023 (“Sony Interactive Entertainment pushes the boundaries of entertainment and innovation, starting from the launch of the original PlayStation in Japan in 1994. Today, we continue to deliver innovative and thrilling experiences to a global audience through our PlayStation line of products and services that include generation-defining hardware, pioneering network services, and award-winning games.”); PlayStation, “PlayStation Games for PC,” available at <https://www.playstation.com/en-us/games/pc-games/>, accessed on December 7, 2023 (“Explore a range of acclaimed titles from PlayStation Studios, now available to enjoy on PC via Steam or Epic Games Store.”); PlayStation, “Discover The Last of Us,” available at <https://www.playstation.com/en-us/the-last-of-us/>, accessed on April 25, 2024 (“Play The Last of Us Part I, now available on PlayStation 5 and for PC ... Naughty Dog’s latest title is The Last of Us Part I ... Naughty Dog is a wholly-owned subsidiary of Sony Interactive Entertainment.”).

¹⁵⁵ Forbes, “Apple,” available at <https://www.forbes.com/companies/apple/>, accessed on April 25, 2024 (“Apple Company Stats ... Country/Territory: United States”); Apple Developer, “Apple technologies for game developers,” available at <https://developer.apple.com/games/>, accessed on December 7, 2023 (“Combined with a full array of game-oriented OS technologies and powerful developer tools, your games can deliver an incredible gaming experience to millions of players.”).

¹⁵⁶ Some titles on the Microsoft Store can be played on both Xbox consoles and PCs with only one purchase. See Xbox, “Xbox Play Anywhere,” available at <https://www.xbox.com/en-US/games/xbox-play-anywhere>, accessed on December 7, 2023 (“Now when you own an Xbox Play Anywhere digital title, it’s yours to play both on Xbox and Windows 10/11 PC.”); Xbox, “Microsoft Store,” available at <https://www.xbox.com/en-GB/microsoft-store>, accessed on April 26, 2024 (“A Store that is twice as fast, easier to navigate, and safer for the whole family to find your next favorite games and entertainment on your Xbox.”).

¹⁵⁷ Xbox, “Xbox app for Windows PC,” available at <https://www.xbox.com/en-US/apps/xbox-app-for-pc>, accessed on April 18, 2024 (“Discover and download new games with Game Pass, play console games on your Windows PC with cloud gaming, and chat with friends across PC, mobile, and console ... Use the Store tab in the app to buy your favorite PC games, DLC, and add-ons.”).

¹⁵⁸ Xbox, “Xbox Game Studios,” available at <https://www.xbox.com/en-US/xbox-game-studios>, accessed on December 7, 2023 (“Our 23 game development studios ... focus on delivering great games for everyone, wherever they play – on console, PC, or mobile devices. We’re responsible for developing and publishing some of the biggest franchises in history: ... *Minecraft*”); Minecraft, “Download Minecraft & Server Software,” available at <https://www.minecraft.net/en-us/download>, accessed on April

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Microsoft owns **Bethesda**, a developer and publisher that formerly distributed games through its Bethesda.net PC software platform.¹⁵⁹ Microsoft also acquired **Activision Blizzard** in 2023, an American developer, publisher, and distributor that created the popular *Call of Duty* and *World of Warcraft* franchises.¹⁶⁰ Activision Blizzard operates Battle.net, a first-party PC software platform.¹⁶¹

e. **NetEase** is a Chinese developer and publisher of both PC and mobile games whose hit titles include *Fantasy Westward Journey* and *LifeAfter*.¹⁶²

f. **Google** is an American distributor that operates the Google Play Store, which is a software platform that distributes game software applications to users of Android devices. Android games purchased through the Google Play Store can run directly on PCs.¹⁶³ Google also operated a cloud gaming platform, Google Stadia, until shutting it down in January 2023.¹⁶⁴

g. **Electronic Arts (EA)** is an American developer, publisher, and distributor that operates the EA App (formerly Origin), which is a first-party PC software platform. EA created *Apex Legends*, a popular multiplayer game, as well as the *Battlefield* and *EA Sports* franchises.¹⁶⁵

25, 2024 (“The Minecraft Launcher is your hub for accessing all of your favorite Minecraft games on PC.”); Keith Stuart and Alex Hern, “Minecraft sold: Microsoft buys Mojang for \$2.5bn,” *The Guardian*, September 15, 2014, available at <https://www.theguardian.com/technology/2014/sep/15/microsoft-buys-minecraft-creator-mojang-for-25bn>, accessed on April 25, 2024 (“Minecraft creator Mojang is being sold to Microsoft”).

¹⁵⁹ Tom Warren, “Microsoft acquired Bethesda after hearing Starfield would be exclusive to PlayStation,” *The Verge*, available at <https://www.theverge.com/2023/6/23/23771828/microsoft-bethesda-acquisition-starfield-playstation-exclusive>, accessed on May 7, 2024 (“Microsoft spent \$7.5 billion to acquire ZeniMax Media, the parent company of Elder Scrolls and Fallout studio Bethesda Softworks.”). Microsoft discontinued the Bethesda launcher on May 11, 2022. See Bethesda, “Sunsetting the Bethesda.net Launcher & Migrating to Steam [Updated April 27, 2022],” April 7, 2022, available at <https://bethesda.net/en/article/2RXxG1y000NWupPalzLbIG/sunsetting-the-bethesda-net-launcher-and-migrating-to-steam>, accessed on April 16, 2024 (“Starting on May 11, you will no longer be able to play and access your games within the Bethesda.net Launcher”).

¹⁶⁰ Dan Milmo, “Microsoft completes \$69bn deal to buy Call of Duty maker Activision Blizzard,” *The Guardian*, October 13, 2023, available at <https://www.theguardian.com/business/2023/oct/13/microsoft-deal-to-buy-call-of-duty-maker-activision-blizzard-cleared-by-uk>, accessed on December 7, 2023 (“Microsoft has completed its \$69bn (£57bn) deal to buy Activision Blizzard, the maker of games including Call of Duty and World of Warcraft”).

¹⁶¹ Battle.net, “Download Battle.net for Windows and Mac,” available at <https://download.battle.net/en-us/desktop>, accessed on April 25, 2024 (“Launch your games, connect with friends, and keep up-to-date with the latest news ... Get access to games like Overwatch 2, Call of Duty: Warzone 2.0, and free trials for many other titles.”).

¹⁶² Arjun Kharpal, “What you need to know about NetEase, the Chinese tech giant that raised \$2.7 billion in Hong Kong,” *CNBC*, June 11, 2020, available at <https://www.cnbc.com/2020/06/11/what-is-netease-the-chinese-tech-giant-that-just-listed-in-hong-kong.html>, accessed on December 7, 2023 (“In the first quarter of 2019, NetEase raked in net revenue of 17.1 billion yuan (\$2.4 billion) ... Of that, nearly 79% came from online games, both on PC and mobile. Some of the company’s hit titles include the ‘Fantasy Westward Journey’ series and ‘LifeAfter.’”).

¹⁶³ Android users are now able to play mobile games on PCs. See Android Developers, “Google Play Games on PC,” available at <https://developer.android.com/games/playgames/overview>, accessed on April 24, 2024 (“Google Play Games on PC brings the best of Google Play by enabling players to experience an immersive and seamless cross-platform gameplay. Join Google Play Games on PC to distribute your games easily across mobile, tablets, Chromebooks, and Windows PCs.”).

¹⁶⁴ Stadia Help, “Stadia Announcement FAQ,” available at <https://support.google.com/stadia/answer/12790109>, accessed on April 17, 2024 (“On September 29, 2022, Google announced that the Stadia servers will be turned off on January 18, 2023.”).

¹⁶⁵ Electronic Arts, “About EA,” available at <https://www.ea.com/about>, accessed on April 25, 2024 (“Headquartered in Redwood City in Northern California, we develop and deliver games, content, and online services for Internet-connected consoles, mobile devices, and personal computers ... [We] are recognized for a portfolio of critically acclaimed, high-quality brands such as EA SPORTS FC™, Battlefield™, Apex Legends™”); Matthew Humphries, “Electronic Arts Waves Goodbye to Origin, Replaces It With the EA App,” *PCMag*, October 7, 2022, available at <https://www.pcmag.com/news/electronic-arts-waves-goodbye-to-origin-replaces-it-with-the-ea-app>, accessed on December 7, 2022 (“After 11 years, EA is ready to replace the Origin games distribution software on PC with a brand new platform known simply as the EA app.”).

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- h. **Nintendo** is a Japanese developer, publisher, and distributor that operates the Nintendo eShop, the software platform for its handheld Switch device. Nintendo created the hit *Mario* and *Zelda* franchises and manufactured popular game consoles such as the Wii and currently manufactures the Switch.¹⁶⁶
 - i. **Take-Two Interactive** is an American holding company that owns a number of popular game developers, publishers, and distributors, and operates two first-party software platforms. Its game studios include Rockstar Games, the creators of the *Grand Theft Auto* and *Red Dead Redemption* franchises, and 2K, known for its line of 2K sports games, *Sid Meier’s Civilization*, *Borderlands*, and other popular game franchises. Rockstar Games operates the Rockstar Games Launcher software platform and 2K operates the 2K Launcher for its games.¹⁶⁷
72. Many of these firms develop and publish their games for release on both PC and console devices.¹⁶⁸ In addition, three of the largest firms in the industry operate **console platforms**: Sony (PlayStation Store), Nintendo (Nintendo eShop), and Microsoft (Microsoft Store on Xbox consoles).¹⁶⁹ I discuss competition between PC and console games in Section 3.1.2. Console platforms have a large presence in the industry and

¹⁶⁶ Forbes, “Nintendo,” available at <https://www.forbes.com/companies/nintendo/>, accessed on April 17, 2024 (“Nintendo Co., Ltd. engages in the development, manufacture, and sale of home entertainment products. Its entertainment products include portable and console game machines and software, ... home console hardware such as Nintendo Wii, Nintendo DS, Nintendo 3DS, and others; as well as software for handheld and home console gaming machine. The company was founded by Fusajiro Yamauchi on September 23, 1889 and is headquartered in Kyoto, Japan.”); Nintendo, “Nintendo eShop,” available at <https://www.nintendo.com/en-gb/Nintendo-eShop/Nintendo-eShop-1806894.html>, accessed on April 17, 2024 (“Nintendo eShop is your official digital games store on Nintendo Switch. Your favourite games can be instantly downloaded to your console, anytime and from the comfort of your home.”); Brian Shea, “Nintendo Talks How Mario And Zelda Have Stayed Relevant for Nearly 40 Years,” *Game Informer*, October 12, 2023, available at <https://www.gameinformer.com/2023/10/12/nintendo-talks-how-mario-and-zelda-have-stayed-relevant-for-nearly-40-years>, accessed on April 25, 2024 (“Ever since Nintendo’s flagship franchise burst onto the scene nearly 40 years ago, the Super Mario Bros. franchise has maintained its popularity, relevance, and status since its revolutionary debut entry. But it’s not alone; the Legend of Zelda series, which started around that time, also remains a genre leader all these decades later.”).

¹⁶⁷ Take-Two Interactive, “Take-Two Interactive Careers,” available at <https://careers.take2games.com/>, accessed on December 7, 2023 (“Headquartered in New York City, Take-Two Interactive Software, Inc. is a leading developer, publisher and marketer of interactive entertainment for consumers around the globe. The Company develops and publishes products principally through its wholly-owned labels Rockstar Games and 2K”); Rockstar Games, “Games,” available at <https://www.rockstargames.com/games>, accessed on April 26, 2024; 2K, “About Us,” available at <https://www.2k.com/en-US/about-us/>, accessed on April 26, 2024 (“Stewards of a growing library of critically-acclaimed franchises such as Battleborn, BioShock, Borderlands, The Darkness, Mafia, NBA 2K, PGA TOUR 2K, Sid Meier’s Civilization, WWE 2K, and XCOM.”); Rockstar Games, “Rockstar Games Launcher,” available at <https://socialclub.rockstargames.com/rockstar-games-launcher>, accessed on April 26, 2024 (“Download and play the latest Rockstar Games PC titles”); 2K, “2K: Store Launcher Standalone,” available at <https://store.2k.com/2klauncher-2klauncher>, accessed on April 26, 2024.

¹⁶⁸ Xbox, “Xbox Game Studios,” available at <https://www.xbox.com/en-US/xbox-game-studios>, accessed on December 7, 2023 (“Our 23 game development studios, now including the studios under Bethesda Softworks, focus on delivering great games for everyone, wherever they play – on console, PC, or mobile devices.”); Take-Two Interactive, “Take-Two Interactive Careers,” available at <https://careers.take2games.com/>, accessed on December 7, 2023 (“Headquartered in New York City, Take-Two Interactive Software, Inc. is a leading developer, publisher and marketer of interactive entertainment for consumers around the globe ... Our products are designed for console systems and personal computers, including smartphones and tablets”); Tom Warren, “Horizon Forbidden West is coming to PC early next year,” *The Verge*, September 27, 2023, available at <https://www.theverge.com/2023/9/27/23874229/horizon-forbidden-west-pc-port-playstation>, accessed on April 17, 2024 (“Sony wants to release half of its games on PC and mobile by 2025”).

¹⁶⁹ PlayStation, “About PlayStation™ Store,” available at <https://www.playstation.com/en-us/about-playstation-store/>, accessed on April 26, 2024 (“Buy the latest games, add-ons and more from world’s largest library of PlayStation content.”); Nintendo, “Nintendo eShop,” available at <https://www.nintendo.com/en-gb/Nintendo-eShop/Nintendo-eShop-1806894.html>, accessed on April 17, 2024 (“Nintendo eShop is your official digital games store on Nintendo Switch.”); Xbox, “Microsoft Store,” available at <https://www.xbox.com/en-US/microsoft-store>, accessed on April 26, 2024 (“Shop for games and entertainment directly on your Xbox console or online at Xbox.com”).

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generated ██████████ in revenue in 2023.¹⁷⁰ Moreover, each platform has a large audience:

- a. The PlayStation Store reached over 150 million users, as measured by Sony's installed base of its console platforms at the end of 2021.¹⁷¹
 - b. The Nintendo eShop reached over 130 million users, as measured by Nintendo's installed base of the Nintendo Switch platform as of September 2023.¹⁷²
 - c. The Microsoft Store on Xbox consoles reached over 60 million users, as measured by Microsoft's installed base of its console platforms at the end of 2021.¹⁷³
73. Many of the other large industry participants listed above operate **first-party PC platforms** where their titles are distributed. These firms include EA, Take-Two, Activision Blizzard, and Riot Games (prior to its acquisition by Tencent). Many other large firms in the industry similarly have developed their own tools for first-party distribution. For example, Roblox Corporation and Nexon America are publishers of popular games (such as *Roblox* and *MapleStory*) and distribute their games through their own launchers.¹⁷⁴ First-party PC platforms are popular among consumers and are often featured in lists of the best desktop gaming platforms.¹⁷⁵ In addition, they are often associated with popular and successful video game titles.
74. While many large developers operate first-party platforms, small and mid-size publishers also pursue self-distribution channels. For example, Battlestate Games is a mid-size developer with about 100 employees. Despite its smaller scale and industry presence compared to firms such as EA, Battlestate Games successfully self-distributes its game *Escape from Tarkov*, reaching total revenues above £100 million since 2022.¹⁷⁶

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¹⁷¹ Weil, "ME/6983/22—Microsoft/Activision Blizzard Microsoft's Response to the CMA's Reference Decisions," October 11, 2022, available at https://assets.publishing.service.gov.uk/media/634e5d3dd3bf7f618d8f88d1/Activision_-_Initial_Phase_2_submission_a.pdf, accessed on May 2, 2024 ("Sony's installed base at the end of 2021 was 151.4 million, as compared to the Xbox installed base of 63.7 million.").

¹⁷² Nintendo, "Dedicated Video Game Sales Units," December 31, 2023, available at https://www.nintendo.co.jp/ir/en/finance/hard_soft/index.html, accessed on April 26, 2024 ("Nintendo Switch Hardware: 139.36 million units.").

¹⁷³ Weil, "ME/6983/22—Microsoft/Activision Blizzard Microsoft's Response to the CMA's Reference Decisions," October 11, 2022, available at https://assets.publishing.service.gov.uk/media/634e5d3dd3bf7f618d8f88d1/Activision_-_Initial_Phase_2_submission_a.pdf, accessed on May 2, 2024 ("Sony's installed base at the end of 2021 was 151.4 million, as compared to the Xbox installed base of 63.7 million.").

¹⁷⁴ Danielle Rose, "Is Roblox on Steam?" *PCGamesN*, available at <https://www.pcgamesn.com/roblox/steam>, accessed on April 26, 2024 ("To access those Roblox games and experiences, you must have Roblox Player, a standalone game platform, installed."); Serkan Toto, "Korean Online Gaming Giant Nexon To Raise \$1.3 Billion With IPO In Japan," *TechCrunch*, November 8, 2011, available at <https://techcrunch.com/2011/11/08/korean-online-gaming-giant-nexon-to-raise-1-3-billion-with-ipo-in-japan/>, accessed on April 26, 2024 ("The company's most famous games include MapleStory, Kart Rider, or Mabinogi."); Nexon, "Welcome to the Nexon Launcher," available at <https://www.nexon.com/main/en/download/launcher>, accessed on April 26, 2024 ("The Nexon Launcher is our new streamlined approach for installing, updating and playing all your favorite Nexon games.").

¹⁷⁵ See, e.g., Shaun Prescott, "The most popular desktop gaming clients, ranked," *PC Gamer*, July 5, 2019, available at <https://www.pcgamer.com/the-most-popular-desktop-gaming-clients-ranked/>, accessed on April 26, 2024; Tanveer Singh, "Best Game Launchers on Windows Compared," *Make Tech Easier*, December 5, 2022, available at <https://www.maketecheasier.com/best-game-launchers-windows/>, accessed on April 26, 2024.

¹⁷⁶ Darin Kwilinski, "Escape from Tarkov – The power and price of popularity," *ESPN*, February 28, 2020, available at https://www.espn.com/esports/story/_/id/28795800/escape-tarkov-power-price-popularity, accessed on April 26, 2024 ("The

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Many smaller titles also successfully self-distribute. For example, *Kerbal Space Program* is sold through its own channel and is a smaller title [REDACTED]

[REDACTED] and [REDACTED].¹⁷⁷

Similarly, *Factorio* is also sold through its own channel, and had [REDACTED]

[REDACTED].¹⁷⁸ As

another example, developer Ironmace was able to sell its title *Dark and Darker* through the creation of “its own launcher, known as Blacksmith,” selling “the game directly from its own website.”¹⁷⁹

75. Some firms specialize in providing resources to help developers and publishers self-distribute. As an example, PatchKit describes itself as an “all-in-one platform for easy game publishing and updating” that is “ideal for developers at any scale” to have a place to “launch [their] game[s] in minutes.”¹⁸⁰ PatchKit helped indie publisher tinyBuild to self-distribute the game *Cartel Tycoon*, which since being released in 2020 has been available on the tinyBuild Launcher and is now available on Steam, Epic Games Store, GOG, Xbox, and PlayStation.¹⁸¹ FastSpring is another resource, a “payment platform for video games and in-game purchases” that allows developers to manage the process of self-distribution.¹⁸²

developer and publisher of *Escape from Tarkov*, Battlestate Games, is made up of about 100 people.”); Battlestate Games Limited, “Annual Report and Financial Statements for the Year Ended 31 January 2023,” October 30, 2023, p. 9, available at <https://find-and-update.company-information.service.gov.uk/company/10036119/filing-history>, accessed on April 26, 2024 (“Turnover: 2023: £65,608,544 ... 2022: £70,335,950”).

¹⁷⁷ Kerbal Space Program, “Welcome to Kerbal Space Program,” available at <https://www.kerbalspaceprogram.com/>, accessed on May 2, 2024. The statistics for *Kerbal Space Program*’s revenue and engagement can be found on [REDACTED]. See Workpaper 12. I recognize that while *Kerbal Space Program* is now owned by Take-Two Interactive, even when the game was first released it still managed to successfully self-distribute by attracting “hundreds of thousands of users.” See Michael McWhertor, “Take-Two acquires Kerbal Space Program,” *Polygon*, May 31, 2017, available at <https://www.polygon.com/2017/5/31/15718982/kerbal-space-program-bought-by-take-two-interactive-squad>, accessed on May 11, 2024; Elizabeth Howell, “Kerbal Space Program celebrates 10 years of challenging space launch physics,” *Space*, June 24, 2021, available at <https://www.space.com/kerbal-space-program-10th-anniversary>, accessed on May 11, 2024 (“When Kerbal Space Program released on June 24, 2011, the astronaut avatars taught hundreds of thousands of users the physics of spaceflight.”).

¹⁷⁸ Factorio, “Game purchase,” available at <https://www.factorio.com/buy>, accessed on April 26, 2024 (“A website key is used to upgrade an account on our website, and allow you to download the game directly from us.”). The statistics for *Factorio*’s revenue and engagement can be found on [REDACTED]. See Workpaper 12.

¹⁷⁹ Matt Wales, “Despite legal woes, *Dark and Darker* finally launches into early access,” *Eurogamer*, August 7, 2023, available at <https://www.eurogamer.net/despite-legal-woes-dark-and-darker-finally-launches-into-early-access>, accessed on April 26, 2024 (“*Dark and Darker*, you might recall, received a hugely positive reception when it featured as part of Valve’s Steam Next Fest earlier this year. Soon after, though, Korean game publisher Nexon accused Ironmace of copyright infringement ... Ironmace’s woes continued when a cease and desist demand from Nexon forced the game off Steam ... As of today, however, *Dark and Darker*’s early access is finally here, with Ironmace having opted to create its own launcher, known as Blacksmith, and sell the game directly from its own website and via digital storefront Chaf Games.”).

¹⁸⁰ PatchKit, “Get Your Game to the World,” available at <https://patchkit.net/>, accessed on April 26, 2024 (“PatchKit is your all-in-one platform for easy game publishing and updating. Launch your game in minutes, manage updates effortlessly, and keep your community engaged with a custom launcher. Ideal for developers at any scale.”).

¹⁸¹ PatchKit, “tinyBuild to engage their community with PatchKit Launcher,” available at https://patchkit.net/clients/tiny_build.html, accessed on April 26, 2024 (“Back in 2020, tinyBuild was researching the possibility of using a customized game launcher to self-distribute a game ... The game was *Cartel Tycoon* ... The first release of *Cartel Tycoon* launcher built with PatchKit services and efforts went surprisingly fine ... The game has been downloaded by thousands of players, which later gained access to the Steam version of the game.”); *Cartel Tycoon*, “*Cartel Tycoon*,” available at <https://www.carteltycoon.com/>, accessed on April 25, 2024 (“Buy on Steam. Click here to download the tinyBuild Launcher. Also available on: [Epic Games Store, GOG.com, PlayStation, and Xbox].”).

¹⁸² FastSpring, “Direct-to-Consumer Video Game Payment Platform,” available at <https://fastspring.com/solutions/gaming/>, accessed on April 26, 2024 (“Payment Platform for Video Games and In-Game Purchases. Collect direct-to-consumer payments for your video games and in-game purchases, enjoy many of the benefits of selling on a game marketplace, and pay a fraction of

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76. Given available data, it is not possible to fully identify (a) all instances where publishers self-distribute their games, (b) the total volume of sales associated with the self-distribution channel,¹⁸³ or (c) how Valve’s alleged conduct would change the costs and benefits of pursuing such options. As discussed further in Section 6.2, individualized inquiry is necessary to identify each publisher’s use of alternative and self-distribution options, and how their incentives for using alternative and self-distribution might change in a but-for world without Valve’s alleged conduct.
77. Firms that do not self-distribute or operate a first-party platform can instead sell their titles through **third-party PC platforms and storefronts**. I summarize below several firms that have not already been discussed in detail and that have operated or currently operate third-party platforms.
- a. **Valve**, an American developer, publisher, and distributor that operates Steam, a PC software platform. Valve developed the popular *Half-Life*, *Counter-Strike*, and *Dota* games.¹⁸⁴
 - b. **Epic Games**, the American developer, publisher, and distributor behind *Fortnite* and the operator of the Epic Games Store (“EGS”), a PC software platform.¹⁸⁵ Epic initially used its own PC launcher in 2017 for its hit game *Fortnite*. In late 2018, Epic Games launched EGS and expanded its offerings to include several first- and third-party titles, thereby positioning itself as an alternative to Steam for both publishers and consumers.¹⁸⁶ Epic Games also develops and licenses to other developers Unreal Engine, a popular tool for game development.¹⁸⁷

the cost ... FastSpring operates under a merchant of record model, which allows you to offload the complexity of global payments, sales tax and VAT compliance, player payments support, and many other aspects of payments management.”).

¹⁸³ Although the precise total amount of self-distribution and the amount of self-distribution undertaken by individual proposed class members is not possible to identify given availability of data, as discussed in Section 6.1, it is clear that first-party or self-distribution channels account for a substantial amount of consumer spending on substitutes to Steam that Dr. Schwartz improperly excludes from his proposed market.

¹⁸⁴ Valve, “About Us,” available at <https://www.valvesoftware.com/en/about>, accessed on December 8, 2023 (“Today, millions of people play our games every day ... Dota Underlords[,] Counter-Strike 2[,] Dota 2[,] ... Half-Life[,] ... Half-Life 2 We created Steam in 2003 to serve as a digital content distribution channel, before app stores existed ... We make all of this stuff collaboratively in Bellevue, Washington.”).

¹⁸⁵ Epic Games, “About Epic Games,” available at <https://www.epicgames.com/site/en-US/about>, accessed on December 8, 2023 (“Epic Games is an American company ... Epic operates Fortnite ... Through Unreal Engine, Epic Games Store, and Epic Online Services, Epic provides an end-to-end digital ecosystem for developers and creators to build, distribute, and operate games and other content.”).

¹⁸⁶ Rob Lefebvre, “Epic’s long-awaited ‘Fortnite’ hits consoles and PC July 25th,” *Engadget*, June 8, 2017, available at <https://www.engadget.com/2017-06-08-epic-fortnite-consoles-steam-july-25th.html>, accessed on April 26, 2024 (“Epic confirmed [Fortnite] will come to all platforms listed above but will use Epic’s own launcher, not Steam, for its PC and Mac version.”); Nick Statt and Sean Hollister, “Epic Games takes on Steam with its own fairer game store,” *The Verge*, December 4, 2018, available at <https://www.theverge.com/2018/12/4/18124203/epic-games-fortnite-valve-steam-game-store-distribution-unreal-engine>, accessed on April 26, 2024 (“Epic is launching a new online store like Valve’s Steam that will similarly feature third-party games, marking yet another substantial threat to Steam’s dominant position as the lead distributor of PC titles”).

¹⁸⁷ Epic Games, “About Epic Games,” available at <https://www.epicgames.com/site/en-US/about>, accessed on December 8, 2023 (“Epic also develops Unreal Engine, which powers the world’s leading games and is also adopted across industries such as film and television, architecture, automotive, manufacturing, and simulation.”).

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- c. **Ubisoft**, a French developer, publisher, and distributor that operates Ubisoft Connect (formerly Uplay), a PC software platform.¹⁸⁸ Ubisoft publishes popular video game franchises such as *Assassin’s Creed*, *Tom Clancy*, and *Just Dance*.¹⁸⁹
- d. **CD Projekt**, a Polish game developer, publisher, and distributor that operates GOG, a third-party PC software platform. CD Projekt also operates the downloadable GOG Galaxy client from which users can launch and play games purchased on GOG. CD Projekt publishes the *Witcher* franchise of games.¹⁹⁰
- e. **Itch.io**, an American distributor primarily focused on indie games that operates the eponymous itch.io platform.¹⁹¹ As of April 2024, the platform hosted over 900,000 products.¹⁹² Itch.io offers flexibility to new video game developers, which makes it an attractive platform for new video game developers to enter the video game distribution industry.¹⁹³
- f. **Discord**, an American firm and operator of Discord, a software application for voice and text chat and former PC software platform.¹⁹⁴

¹⁸⁸ Ubisoft, “Ubisoft Connect,” available at <https://www.ubisoft.com/en-us/ubisoft-connect>, accessed on April 26, 2024 (“Ubisoft Connect is a multi-platform ecosystem of player services and the go-to destination for your Ubisoft games ... Accessible through our desktop app, mobile companion app, and directly from your games on both PC and console”).

¹⁸⁹ Ubisoft, “Our Story,” available at <https://www.ubisoft.com/en-us/company/about-us/our-story>, accessed on December 8, 2023 (“As Ubisoft grew from a family business to a global organization, our desire to embrace new ideas and technologies has never wavered. Whether that’s by pioneering dynamic lighting for Tom Clancy’s Splinter Cell on the PlayStation 2, getting players moving with motion controls in Just Dance, or building complex systemic open worlds in Assassin’s Creed, Watch Dogs, and The Division, finding exciting new ways to make games is more than just a business strategy – it’s part of our DNA.”).

¹⁹⁰ CD Projekt Red, “About Us,” available at <https://www.cdprojektred.com/en/about-us>, accessed on April 17, 2024 (“We are a global video game development studio established in 2002. Headquartered in Warsaw”); Andrew Webster, “GOG’s DRM-free Steam competitor is finally open to everyone,” *The Verge*, May 5, 2015, available at <https://www.theverge.com/2015/5/5/8524597/gog-galaxy-open-beta-launch>, accessed on April 26, 2024 (“Called GOG Galaxy, the service is an online gaming platform that includes Steam-like community features and tools like auto-updates to keep your games up to date without any hassle.”); Jeffrey L. Wilson and Jordan Minor, “GOG.com Review,” *PCMag*, July 19, 2023, available at <https://www.pcmag.com/reviews/gogcom-for-pc>, accessed on December 8, 2023 (“It also helps that GOG’s parent company, CD Projekt, also owns the development crew behind modern masterpiece that is The Witcher III: Wild Hunt, as well as Cyberpunk: 2077.”).

¹⁹¹ Itch.io, “About itch.io,” available at <https://itch.io/docs/general/about>, accessed on December 8, 2023 (“itch.io is an open marketplace for independent digital creators with a focus on independent video games.”).

¹⁹² Itch.io, “Top Games,” available at <https://itch.io/games>, accessed on April 26, 2024 (“Top Games ... 938,087 results”).

¹⁹³ Jared Newman, “How Itch.io became an indie PC game haven—and Steam’s antithesis,” *PCWorld*, March 31, 2017, available at <https://www.pcworld.com/article/406186/how-itchio-became-an-indie-pc-game-havenand-steams-antithesis.html>, accessed on April 19, 2024 (“To further support indie development, shoppers can pay whatever they want above a minimum price set by creators, who decide how much commission—if any—Itch.io should get from each sale. More importantly, Corcoran and his crew go out of their way satisfy indie developers’ whims, even accommodating one-off requests.”).

¹⁹⁴ Kellen Browning, “How Discord, Born from an Obscure Game, Became a Social Hub for Young People,” *New York Times*, December 29, 2021, available at <https://www.nytimes.com/2021/12/29/business/discord-server-social-media.html>, accessed on May 13, 2024 (“Discord, which is based in San Francisco”); Nick Statt, “Discord’s game store launches globally today with indie gems like Hollow Knight and Dead Cells,” *The Verge*, October 16, 2018, available at <https://www.theverge.com/2018/10/16/17980810/discord-digital-game-distribution-store-steam-competitor-nitro-subscription-service>, accessed on April 27, 2024 (“Discord’s digital game store, ... is now available globally in a public beta capacity, the chat company announced today. ... Discord, a PC gaming-centric application that combines voice and text chat with a robust platform for third-party integrations, has been one of the fastest growing gaming-centric companies of the last decade.”); James Davenport, “How the Discord Store’s sudden closure destroyed and remade this indie horror game,” *PC Gamer*, December 13, 2019, available at <https://www.pcgamer.com/how-the-discord-stores-sudden-closure-destroyed-and-remade-this-indie-horror-game/>, accessed on May 13, 2024 (“Shortly after launch on the Discord Store, the future of the game became unexpectedly precarious when the shop suddenly closed.”).

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- g. **Amazon**, an American developer, publisher, and distributor that operates Twitch,¹⁹⁵ a video streaming service and former software platform for game distribution, the Amazon Games App,¹⁹⁶ and the Amazon Luna cloud platform.¹⁹⁷ Amazon also distributes games via its online retail platform.¹⁹⁸
 - h. **Green Man Gaming**, a United Kingdom-based distributor of PC and console games that operates the Green Man Gaming PC storefront.¹⁹⁹
 - i. **Humble Bundle, Inc.**, an American distributor that operates the Humble Store, Humble Choice, and Humble Bundle PC storefronts.²⁰⁰
 - j. **GamersGate**, a Sweden-based distributor of PC games launched by Paradox Interactive in 2006.²⁰¹ Eventually Paradox established GamersGate as an independent company that now operates as a separate entity.²⁰²
78. In addition to the fact that many firms adopt first-party platforms or self-distribute their titles, some firms switch between exclusively offering first-party games and distributing both first-party games and third-party games from other publishers. For example, at launch, Ubisoft distributed only its own games on Uplay but began distributing indie games from other publishers in 2013.²⁰³ Several other third-party platforms also started

¹⁹⁵ Eugene Kim, “Amazon Buys Twitch For \$970 Million in Cash,” *Business Insider*, August 25, 2014, available at <https://www.businessinsider.com/amazon-buys-twitch-2014-8>, accessed on December 8, 2023 (“Amazon said on Monday it would pay \$970 million in cash for Twitch, a live video-game-streaming site with more than 55 million users that’s like YouTube for video games.”).

¹⁹⁶ Gematsu, “Amazon Games,” available at <https://www.gematsu.com/companies/amazon-games>, accessed on April 17, 2024 (“Amazon Games, formerly Amazon Game Studios, is a video game publisher and developer headquartered in Seattle, Washington, and a subsidiary of Amazon.”); Amazon Games, “Games,” available at <https://www.amazongames.com/en-us>, accessed on April 17, 2024.

¹⁹⁷ Amazon, “Luna,” available at <https://www.amazon.com/luna/landing-page>, accessed on April 17, 2024 (“Play your favorite games straight from the cloud”).

¹⁹⁸ Amazon, “Amazon Store,” available at <https://www.aboutamazon.com/what-we-do/amazon-store>, accessed on April 24, 2004 (“Amazon.com From Amazon Fashion and Prime Wardrobe, to automotive supplies and handmade art, we offer customers a vast selection of products and services to choose from, with delivery options that meet their needs.”).

¹⁹⁹ Green Man Gaming, “We’re Green Man Gaming,” available at <https://www.greenmangaming.com/who-we-are/>, accessed on December 7, 2023 (“Based in sunny London, UK, Green Man Gaming is a company with a mission - to make sure gaming gets to everyone. To do that we sell PC and Xbox games at amazing prices. There’s over 10,000 games on store and they are added to daily, all sourced from publishers.”).

²⁰⁰ Humble Bundle, “What is Humble Bundle?” available at <https://www.humblebundle.com/about>, accessed on April 17, 2024 (“Humble Bundle sells games, ebooks, software, and other digital content. Our mission is to support charity while providing awesome content to customers at great prices ... we have humbly grown into a store full of games and bundles, a gaming membership service, a game publisher, and more ... Humble Bundles are limited-time collections of games, books, software, and more ... Humble Choice is our PC game membership that gives you a monthly mix of great PC games to own forever ... The Humble Store is a digital storefront of games, featuring thousands of titles from developers and publishers both large and small.”); Humble Bundle, “Jobs,” available at <https://www.jobs.humblebundle.com/>, accessed on April 26, 2024 (“Humble Bundle has evolved into an award-winning company of over 50 employees located in San Francisco.”).

²⁰¹ GamersGate, “About us,” available at <https://www.gamersgate.com/about-us/>, accessed on December 7, 2023 (“We are GamersGate. And we are here to get you official keys for cheap ... We hail from Sweden.”); GlobeNewswire, “Paradox Interactive Launches Large-Scale International Digital Distribution Service,” November 20, 2006, available at <https://www.globenewswire.com/news-release/2006/11/20/351416/109087/en/Paradox-Interactive-Launches-Large-Scale-International-Digital-Distribution-Service.html>, accessed on December 8, 2023 (“Paradox Interactive ... announced today the launch of their latest venture, the digital distribution platform Gamer’s Gate. Gamer’s Gate has serviced gamers as a trial version since April 2006.”).

²⁰² Charlie Hall, “Solving Paradox: How the historical strategy game maker stayed alive,” *Polygon*, August 7, 2013, available at <https://www.polygon.com/features/2013/8/7/4554042/paradox-interactive-history>, accessed on April 17, 2024 (“Eventually GamersGate broke off to be its own entity.”).

²⁰³ Samit Sarkar, “Ubisoft now selling third-party games on Uplay Shop and its own games on EA’s Origin,” *Polygon*, February 19, 2013, available at <https://www.polygon.com/2013/2/19/4001836/ubisoft-uplay-shop-third-party-games-ea-origin-chris>

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as first-party platforms, distributing games developed in-house. Included in this group are GamersGate,²⁰⁴ Microsoft,²⁰⁵ EA Origin,²⁰⁶ and Tencent.²⁰⁷ I discuss how publishers’ use of their own platforms, as well as of third-party platforms, affects decisions and potential for harm from the alleged conduct in detail in Section 7.2.3.

2.4. Publishers in the proposed class are diverse

79. As discussed above, there are many dimensions along which video game publishers and the types of games they publish vary, and video game pricing reflects the economics of differentiated products. Because games—and the set of games—published by different publishers differ from one another, each title—and therefore each publisher—faces its own supply and demand system that can vary based on numerous factors. These include:

- a. The popularity (quantity sold) of the title.

early-interview, accessed on April 17, 2024 (“Ubisoft is beginning a major expansion of its digital distribution presence today: the company is now selling games from other studios and publishers through the Uplay Shop, its online store ... The service’s online storefront, the Uplay Shop, has only sold Ubisoft-published games [up] to this point.”).

²⁰⁴ GamersGate was created by Paradox Interactive when the company experimented with selling an expansion pack exclusively through download. The product sold well, encouraging the creation of “Paradox On Demand, to which [Paradox Interactive] slowly added other titles from its catalog.” The platform eventually re-branded to GamersGate and expanded offering third-party games outside the Paradox catalog. See Charlie Hall, “Solving Paradox: How the historical strategy game maker stayed alive,” *Polygon*, August 7, 2013, available at <https://www.polygon.com/features/2013/8/7/4554042/paradox-interactive-history>, accessed on April 17, 2024 (“In 2005, on the heels of Valve’s successful Steam marketplace which had launched just a year previous, Wester ran an experiment. He sold an expansion ... via download only ... the expansion sold well. That encouraged the company to open Paradox On Demand, to which it slowly added other titles from its catalog. Before long they changed the name of the service to GamersGate.”); GamersGate, “About us,” available at <https://www.gamersgate.com/about-us/>, accessed on December 7, 2023 (“We’re teamed up with many publishers from around the world, from indie to AAA, so by making purchases with us, you are supporting your favorite developers.”).

²⁰⁵ In the 1980s Microsoft attempted to enter the gaming industry by developing and distributing games such as Microsoft Adventure, Microsoft Decathlon, Microsoft Jet, and Microsoft Flight Simulator. It was not until the mid-1990s that “Microsoft decided to become a traditional third-party publisher.” See Forbes, “Why Did Microsoft Enter the Video Game Space?” July 17, 2018, available at <https://www.forbes.com/sites/quora/2018/07/17/why-did-microsoft-enter-the-video-game-space/>, accessed on April 17, 2024 (“In the 1980s and the early part of the 1990s, companies like Atari, Sega, Nintendo, Commodore, Electronic Arts, and Activision controlled most of the video game market. Microsoft didn’t ... Microsoft’s first real effort to take gaming seriously didn’t occur until 1995 ... By this time, Microsoft decided to become a traditional third-party publisher.”).

²⁰⁶ EA launched Origin as a first-party platform in 2011 and then a few months later began to distribute third-party games. EA later discontinued the distribution of third-party games and is now a first-party platform once again. See Electronic Arts, “EA Launches Origin,” June 3, 2011, available at https://s22.q4cdn.com/894350492/files/doc_news/archive/582630.pdf, accessed on April 17, 2024 (“Origin is where gamers can go to find, purchase and download all the best content from EA.”); Electronic Arts, “Origin Expands to Offer Games from Major Publishers,” October 27, 2011, available at <https://ir.ea.com/press-releases/press-release-details/2011/Origin-Expands-to-Offer-Games-from-Major-Publishers/default.aspx>, accessed on April 17, 2024 (“Origin, EA’s direct-to-consumer gaming platform, will soon offer some of the top PC game titles from publishers Warner Bros. Interactive Entertainment, THQ and Capcom Entertainment, Inc.”); Electronic Arts, “Upcoming Changes to the EA Origin Catalog,” available at <https://www.ea.com/ea-pc-third-party-titles-2022>, accessed on April 27, 2024 (“Starting on June 13, 2022 ... Origin will no longer sell games from third party publishers.”).

²⁰⁷ Tencent initially launched its online game platform, QQ Games, in August 2003. In 2004 all games offered on the platform were developed by QQ. Later Tencent began to offer third-party games including *Smite* in 2013. See Tencent, “About Us,” available at <https://www.tencent.com/en-us/about.html>, accessed on April 17, 2024 (“2003, Aug, Launched online game platform QQ Games”); Tencent, “QQ Game’s simultaneous online user accounts broke 300 thousand,” May 14, 2004, available at <https://www.tencent.com/en-us/articles/80231.html>, accessed on April 17, 2024 (“Until now QQ Game have introduced [the] following 14 online games for free suitable for diversified needs from different players: Chess: kriegspiel Chinese chess gobang[,] Cards: Shengji Doudizhu Chudadi Gongzhu showhand blackjack 3-to-1[,] Leisure: QQ tetris QQ bobble and chatroom for QQ show”); Jenna Pitcher, “Smite expands into China with Hi-Rez and Tencent deal, receives new features,” *Polygon*, August 22, 2013, available at <https://www.polygon.com/2013/8/22/4646506/smite-expands-into-china-with-hi-rez-and-tencent-deal-receives-new>, accessed on April 27, 2024 (“Hi-Rez Studios’ free-to-play MOBA, Smite, will see a release in China through a new worldwide publishing partnership with Tencent.”).

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- b. The nearness of competition with other titles (which may include genre, development budget, and multiplayer functionality).
 - c. The pricing strategy pursued by the publisher (which might include the use of microtransactions, the use of DLC, and the frequency of discounts).
 - d. The relationship between the publisher and developer of a game.
 - e. The type of audience base, and the audience base’s loyalty to a given title.
80. I discuss these differences across economic characteristics in detail in Appendix Section 10. I discuss the implications of these differences in economic characteristics for Plaintiffs’ claims of common harm to proposed class members in the sections that follow.

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3. DR. SCHWARTZ’S ANALYSIS OF MARKET DEFINITION IS FLAWED

81. In this section, I address Dr. Schwartz’s flawed analysis of market definition and how it affects the assessment of Valve’s alleged monopoly power and class-wide harm. Dr. Schwartz contends that the relevant geographic market is global, that “the relevant product market in this matter is the market for third-party digital PC game distribution via platforms,” and that Valve’s alleged market share in this proposed market is evidence of monopoly power.²⁰⁸
82. I agree that the geographic market is global, but I find that Dr. Schwartz’s proposed product market definition improperly excludes several important economic substitutes to Steam, causing him to inappropriately underestimate market size and overestimate Valve’s market share. Under his proposed market definition, Dr. Schwartz fails to account for a large amount of consumer spending on critical substitutes to Steam. As a result, his estimate of the size of the market is over four times smaller than and inconsistent with estimates used by Plaintiffs in the Complaint,²⁰⁹ and his estimates of market shares are nearly three times larger than and inconsistent with estimates used by other industry participants. Specifically, while Dr. Schwartz estimates Valve market shares of between [REDACTED] and [REDACTED] percent from 2017 to 2021, Microsoft estimated Valve’s 2020 and 2021 market share to be 10 to 20 percent across all platforms (including PCs and consoles), or 20 to 30 percent for PC distribution alone.²¹⁰ Dr. Schwartz’s alleged market definition analysis is flawed, therefore the market shares it produces are neither reliable evidence that Valve possesses monopoly power nor reliable inputs for his analysis of antitrust harm.
83. This section proceeds as follows.
- a. First, in Section 3.1, I analyze Dr. Schwartz’s product market definition. I conclude that from an economic perspective, Dr. Schwartz improperly excludes from his proposed relevant market video game sales through first-party platforms, console platforms, and physical stores.²¹¹ Dr. Schwartz fails to consider evidence of demand substitution, where consumers and publishers switch between platforms in response to prices changes. This leads him to incorrectly exclude alternatives that compete with digital third-party PC gaming platforms such as Steam. The evidence Dr.

²⁰⁸ Schwartz Report, ¶¶ 48, 130 (“[T]his [market share] provides a powerful economic basis for the conclusion that Valve has monopoly power in the relevant market”). Throughout my report, I refer to “Valve’s share of sales” or “Valve’s proposed-market share” to mean Valve’s share of sales through Steam (and not as a publisher) relative to total global sales of video games and other relevant products, or relative to Dr. Schwartz’s proposed market.

²⁰⁹ Complaint, ¶ 116. I note that Dr. Schwartz’s product market definition is narrower than that put forward by Plaintiffs in their Complaint of “PC game distribution.” See Complaint, ¶ 91 (“The relevant product market is the PC game distribution market.”); Schwartz Report, ¶ 58 (“[M]y candidate market is the market for third-party digital PC game distribution via platforms.”).

²¹⁰ Schwartz Report, ¶ 130 (“Valve’s worldwide market share, measured in terms of third-party game user sales occurring on Steam, is between approximately [REDACTED] %.”); Conselho Administrativo De Defesa Econômica, “E-mail Microsoft / Activision (Resp. Of. 4121/2022) [Document 1079485],” June 22, 2022, pp. 12, 13, Table 8, Table 9, available at https://sei.cade.gov.br/sei/modulos/pesquisa/md_pesq_processo_exibir.php?1MQnTNkPQ_sX_bghfgNtnzTLgP9Ehbk5UOJvmyzesnbE-Rf6Pd6hBcedDS_xdwMQMK6_PgwPd2GFLljH0OLyFX6gl2sGKAL6BCs1NvfGDcTA25PStaVelgicwm5iRue6, accessed on April 18, 2024 (“Table 8. Digital Distribution of PC and Console Games – Global – 2020 and 2021 ... Table 9. Digital Distribution of PC Games – Global – 2020 and 2021.”).

²¹¹ In this report, I focus on important substitutes that Dr. Schwartz improperly excludes from his proposed market definition. I am not providing an opinion on whether or not this is a comprehensive list of substitutes that Dr. Schwartz improperly excludes.

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Schwartz *does* consider when excluding these platforms is either flawed or inappropriate for market definition.

- b. In Section 3.2, I analyze the implications of Dr. Schwartz’s flawed market definition analysis for (a) his claim that Valve’s alleged market shares are consistent with Valve possessing monopoly power, and (b) his estimates of class-wide damages. Using his flawed market definition, Dr. Schwartz opines that Valve held an alleged market share of ██████ percent between 2017 and 2021. I find that Dr. Schwartz’s proposed market size estimates fail to capture critical substitutes to Steam, which account for a large amount of consumer spending. Once I account for important substitutes to Steam that Dr. Schwartz improperly excludes, the findings are inconsistent with Valve having monopoly power. Dr. Schwartz’s overestimation of Valve’s alleged market share also affects his damages estimations, since market shares are an input into his damages model.

3.1. Dr. Schwartz’s overly narrow market definition improperly excludes important substitutes to Steam, such as first-party PC, console, and physical distribution

84. To evaluate Valve’s monopoly power, or lack thereof, it is critical that Dr. Schwartz properly define the geographic and product markets in which Valve competes and then calculate Valve’s market share.²¹² In this section, I show that Dr. Schwartz improperly excludes important alternatives that compete with digital third-party PC gaming platforms, including first-party digital PC distribution (Section 3.1.1), console game sales (Section 3.1.2), and physical video game sales at brick-and-mortar stores and online (Section 3.1.3).²¹³
85. As discussed in Section 2, Steam is a two-sided platform with video game publishers on one side and video game users on the other. The total quantity transacted on Steam depends on the preferences of both publishers and users, including their sensitivity to price changes and their alternative options. As a consequence, an appropriate analysis of market definition must account for demand substitution on both sides of the platform. The evidence Dr. Schwartz *does* consider when excluding these platforms is either flawed or inappropriate for market definition. Furthermore, some of this evidence underscores the need for individualized inquiry to assess any alleged harm from the challenged conduct.

²¹² U.S. Department of Justice and the Federal Trade Commission, “Calculating market shares and concentration,” Merger Guidelines, Section 4.4, December 18, 2023, p. 49, available at <https://www.justice.gov/atr/2023-merger-guidelines>, accessed on April 17, 2024 (“As discussed above, the Agencies may use evidence about market shares and market concentration as part of their analysis.”).

²¹³ I note that while Dr. Schwartz fails to consider Steam keys in his calculation of revenue shares, as discussed in Section 4.1, he does include Steam key resellers in the relevant market. See Schwartz Report, ¶ 63 (“These platforms differ from Steam in that they are sales platforms; users cannot play games on the platform. These sales platforms rely on game-play platforms, in that they sell game keys (e.g., Steam Keys) to games that consumers then redeem on those other platforms (e.g., Steam).”).

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3.1.1. Dr. Schwartz improperly excludes first-party sales from his proposed relevant market

86. Dr. Schwartz excludes sales on first-party platforms from his proposed product market.²¹⁴ In his report, Dr. Schwartz’s proposed product market excludes not only sales on first-party platforms but also sales of a publisher’s first-party games on the third-party platform that the publisher operates (i.e., it excludes sales of the platform operator’s *own* games on its *own* third-party platform).²¹⁵ For example, EGS is a third-party platform operated by publisher Epic Games that sells Epic Games’ own games (e.g., *Fortnite*) in addition to games from other publishers.²¹⁶ Dr. Schwartz’s proposed product market excludes sales of Epic Games’ own games on the EGS platform, but it includes the sales of games published by other publishers on the EGS platform.
87. However, when challenged at deposition, Dr. Schwartz testified that first-party sales on third-party platforms, such as the *Fortnite* example I describe above, would be included in his proposed market definition and that “what is excluded from the relevant market is the pure first-party distributor.”²¹⁷ This is inconsistent with Dr. Schwartz’s proposed market definition and shares in his report.
88. In this section, I explain that Dr. Schwartz’s decision to exclude first-party platforms and sales from the proposed market is inconsistent with the evidence. First, his exclusion of first-party sales on third-party platforms in his report is at odds with the evidence. Moreover, his position at deposition to exclude all sales on first-party platforms but include first-party sales on third-party platforms remains inconsistent with the evidence and is also inconsistent with the calculations of market size and market share in his report.
89. First, regardless of whether he uses the market definition proposed in his report or in his deposition, **Dr. Schwartz ignores evidence of demand substitution by publishers between first-party platforms and third-party platforms.** As the U.S. competition agencies state, “Market definition focuses solely on demand substitution factors; that is, on customers’ ability and willingness to substitute away from one product or location to another in response to a price increase or other worsening of terms.”²¹⁸ Demand substitution between two products or services is important evidence that the two products or services are in the same product market.

²¹⁴ Schwartz Report, ¶ 86 (“The expense and user reach issues on the publisher side, as well as the user experience on the gamer side, suggest that [first-party platforms are] not a feasible substitute.”).

²¹⁵ Schwartz Report, Footnote 383 (“For purposes of my market share analysis, I consider revenues from the entire *third-party transaction value of user sales on a given service* from 2017–2021.” (emphasis added)). Dr. Schwartz then explains how he removes first-party sales from each third-party platform included in his proposed market. See, e.g., Schwartz Report, Footnote 383 (“For Steam, Epic Games Store, Humble Bundle, Target, Best Buy, and the Microsoft Store, I rely on financials produced by each party in this matter, limiting them to third-party sales only.”); Schwartz Report, backup materials.

²¹⁶ Epic Games, “Epic Games Store 2021 Year in Review,” January 27, 2022, available at <https://www.epicgames.com/site/en-US/news/epic-games-store-2021-year-in-review>, accessed on April 17, 2024 (“Third-party games represented 36% of all sales with more than \$300M in player spending, a 12% increase from 2020.”).

²¹⁷ Schwartz Deposition, p. 55 (“If all they sell is their games, then that’s first-party distribution. It becomes third-party distribution when they sell games from other distributors. That’s the distinction that I’m drawing. And so it’s the -- what is excluded from the relevant market is the pure first-party distributor.”).

²¹⁸ U.S. Department of Justice and the Federal Trade Commission, “Market Definition in Certain Specific Settings” Merger Guidelines, Section 4.3.D, December 18, 2023, p. 46, available at <https://www.justice.gov/atr/2023-merger-guidelines>, accessed on April 17, 2024.

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Dr. Schwartz acknowledges this;²¹⁹ yet, in excluding first-party platforms from his proposed market, he fails to consider evidence of demand substitution between first- and third-party platforms.

90. Publishers’ response to Valve’s introduction of tiered revenue shares in 2018 provides clear evidence of demand substitution between first- and third-party platforms. Before the policy change, some large publishers such as Activision Blizzard, Ubisoft, and EA stopped releasing games on Steam and instead began exclusively releasing their games on other platforms or their own platforms.²²⁰ Dr. Schwartz notes that these large publishers indicated that their reason for shifting to self-distribution was that Valve’s revenue share was too high.²²¹ In response to increasing competition, Valve lowered its revenue share in 2018 by introducing revenue tiers that offered a greater share of revenue to games that surpassed certain sales thresholds.²²² Following this 2018 change, large publishers who were distributing games through their own platforms, such as Activision Blizzard, Ubisoft, and EA, returned to Steam.²²³
91. Valve also provided publishers with other incentives to offer their games on Steam

²¹⁹ Schwartz Report, ¶ 53 (“In other words, [a]lthough courts and antitrust enforcement agencies consider a range of factors, the single most important consideration in antitrust relevant market definition is the consumer’s ability and propensity to substitute one product for another.”).

²²⁰ Starting in August 2018, it was known that [REDACTED] was planning on leaving Steam. See Email chain from Cassidy Gerber to Kristian Miller and Dario Casali, “RE: [REDACTED] August 10, 2018, VALVE_ANT_0053662–663 at 663 (“We’ve spent some time discussing and there’s a good chance that the next [REDACTED] that is currently in pre-order on Steam will be the last title we ship on [REDACTED] for a while. We absolutely intend to make our best effort to convince them to stay – [REDACTED]”).

[REDACTED]. Ubisoft left Steam in early 2019 along with Activision Blizzard, which left Steam after the release of its 2017 *Call of Duty* title. See Kyle Orland, “Ubisoft comes crawling back to Steam after years on Epic Games Store,” *Ars Technica*, November 22, 2022, available at <https://arstechnica.com/gaming/2022/11/ubisoft-comes-crawling-back-to-steam-after-years-on-epic-games-store/>, accessed on April 17, 2024 (“Since early 2019, Ubisoft has made a point of moving its PC releases away from Steam and towards the Epic Games Store and its own Ubisoft connect platform ... Ubisoft’s return to Steam comes after Activision Blizzard ended a similar years-long Steam absence for the ultra-popular *Call of Duty* franchise. This year’s *Call of Duty: Modern Warfare 2* was the first series game to appear on Steam since 2017’s *Call of Duty WW2*, with intervening releases available only on Activision Blizzard’s Battle.net launcher.”). EA had stopped releasing titles on Steam in 2011 and did not come back to Steam until late 2019. See Email chain from Ricky Uy to Scott Lynch, “RE: [REDACTED] March 26, 2015, VALVE_ANT_0293869–870 at 869 (“Sent: Wednesday, March 18, 2015 ... [REDACTED]”).

[REDACTED]; Lynch Deposition, pp. 193–194 (“Q. (BY MR. SIEBERT) There came a time that EA did bring their major titles back to Steam; right? A. Yes, they started releasing some of their games they hadn’t released on Steam and probably did some new -- new releases too. Q. That was in about September of 2019? A. Yeah, that seems around the timeframe.”).

²²¹ Schwartz Report, ¶¶ 213 (“In 2019, Ubisoft reversed course and stopped releasing new games on Steam, instead focusing only on EGS and Ubisoft Store. Ubisoft claimed that Steam’s business model was ‘unrealistic’ and ‘doesn’t reflect where the world is today in terms of games distribution.’”), 306 (“Mr. Lynch testified that the motivation for the revenue share change was both to keep publishers on Steam and to bring back publishers that had left the platform, such as EA and Bethesda.”).

²²² Steam, “New Revenue Share Tiers and other updates to the Steam Distribution Agreement,” December 1, 2018, available at <https://steamcommunity.com/groups/steamworks/announcements/detail/1697191267930157838>, accessed on April 18, 2024 (“Starting from October 1, 2018 (i.e. revenues prior to that date are not included), when a game makes over \$10 million on Steam, the revenue share for that application will adjust to 75%/25% on earnings beyond \$10M. At \$50 million, the revenue share will adjust to 80%/20% on earnings beyond \$50M.”).

²²³ Tyler Wilde, “They really all came crawlin’ back to Steam, didn’t they?” *PC Gamer*, December 15, 2022, available at <https://www.pcgamer.com/they-really-all-came-crawlin-back-to-steam-didnt-they/>, accessed on April 20, 2024 (“After releasing the first two Mass Effect games on Steam, EA announced that Mass Effect 3 would only be available on its proprietary client, Origin ... Eight years later, in 2020, EA finally released Mass Effect 3 on Steam ... After sequestering the Call of Duty games on Blizzard’s Battle.net for a time, Activision came back to Steam with Call of Duty: Modern Warfare 2 and Warzone 2.0. Microsoft started releasing games on Steam again in 2019 ... Following a couple years of Epic Games Store exclusivity, Ubisoft finally released Assassin’s Creed Valhalla on Steam.”).

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

92. These examples of publishers’ behavior provide direct evidence of demand substitution between first- and third-party platforms. Publishers who previously offered their games—sometimes exclusively—on first-party platforms began offering their games as third-party titles on Steam in response to a decrease in Steam’s price (i.e., a decrease in the revenue share Valve charged). Given this clear evidence of substitution, it would be improper to exclude first-party platforms from any market definition that includes third-party platforms.²²⁶
93. **Second, Dr. Schwartz’s exclusion of first-party distribution from his proposed market, both as he defines it in his report and in deposition, is inconsistent with other aspects of his report, in particular, his reasons for excluding console sales from his proposed market and his calculations of the alleged but-for market share.**
94. When evaluating whether console platforms are part of his proposed relevant market (a topic I discuss next in Section 3.1.2), Dr. Schwartz claims that Valve’s lack of enforcement of an alleged PMFN on consoles is evidence that console platforms are not in his proposed relevant market.²²⁷ On the other hand, Dr. Schwartz claims that first-party platforms *are* subject to the alleged PMFN but are not in his proposed relevant market.²²⁸ Regardless of whether this is an appropriate basis for defining a relevant product market, based on Dr. Schwartz’s logic, Valve would have no reason to enforce a PMFN against first-party platforms and to prevent them from undercutting Steam’s prices unless it viewed those first-party platforms as a competitive threat that video game users would substitute towards if prices were lower on those platforms. This is a fundamental inconsistency between Dr. Schwartz’s PMFN theory of harm and his proposed market definition.²²⁹

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

²²⁶ As discussed in Section 8, Dr. Schwartz not only disregards this event as evidence as substitution, but he also mischaracterizes it as an “empirical” approach to assess class-wide impact of Valve’s alleged PMFN.

²²⁷ Schwartz Report, ¶ 105 (“Additionally, documents and testimony confirm that video game distribution services for consoles are not directly substitutable with video game distribution services for PC ... when Valve learned about exclusive console DLC content for [REDACTED] it did not consider the exclusivity to be in violation of its SDA.”).

²²⁸ See, e.g., Schwartz Report, ¶ 214 (“Moreover, the need to distribute its games through Steam *prevented* Ubisoft from competing with Steam on game price on its *own* platform because of Steam’s PMFN Policy.”).

²²⁹ I analyze Dr. Schwartz’s PMFN claims in Section 7 below. I find no evidence of enforcement of a price PMFN for any platforms.

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95. Dr. Schwartz’s exclusion of first-party distribution from his proposed relevant market is also at odds with his calculation of alleged but-for market shares. Dr. Schwartz calculates Valve’s market share in the but-for world as its percentage of the sum of eight publishers’ revenues between 2008 and 2012 for selling their games on Steam.²³⁰ Dr. Schwartz assumes that these publishers’ but-for market shares would be proportional to the popularity of their titles on Steam in the actual world.²³¹ When distributed on their own platforms, these titles’ sales constitute first-party sales. Therefore, Dr. Schwartz appears to acknowledge that users substitute between first- and third-party distribution.
96. **Third, excluding first-party distribution from the proposed relevant market, as Dr. Schwartz does in his report, leads to inconsistencies that do not make logical or economic sense, since video game users exhibit demand substitution between first-party and third-party platforms.** The inconsistencies are driven by the fact that Dr. Schwartz excludes not only revenues from first-party platforms, but also revenues from first-party games offered on third-party platforms. That is, for a publisher who owns a platform that sells games from other publishers, only sales associated with *other* publishers’ games are considered part of Dr. Schwartz’s proposed market. Sales from the publisher’s *own* games are excluded from Dr. Schwartz’s proposed market. However, this is inconsistent with how users interact with video game distribution platforms because users can substitute between first- and third-party games. In fact, when confronted with the inconsistencies arising from excluding revenues from first-party sales on third-party platforms, Dr. Schwartz testified in his deposition that his proposed market definition does not exclude such sales but excludes only first-party platforms, which is at odds with the opinions stated in his report.²³²
97. As an example, according to Dr. Schwartz’s market definition proposed in his report, Valve’s first-party games sold on Steam are not in the same relevant market as third-party games sold on Steam. This amounts to saying that users on Steam consider Valve’s games less of a substitute for third-party games on Steam simply because the platform operator, Valve, publishes them. This does not make economic sense—a game such as *Half-Life 2* (published by Valve) is a closer substitute for consumers to other games in the “shooter” genre such as *Call of Duty: Modern Warfare II* (published by Activision

²³⁰ Schwartz Report, p. 205, Figure 6, ¶ 375 (“To calculate each publisher’s share of revenues on Steam, I focus on the period between 2008 and 2012. The year 2008 is used as the starting point to calculate revenues, as large publishers such as EA (2008) and Ubisoft (2008) did not offer games on Steam during the platform’s initial years. The year 2012 is used as the ending point to calculate revenues, as publishers such as EA began to launch new titles exclusively on their own platforms beginning in 2012.”).

²³¹ Schwartz Report, ¶ 374 (“Valve’s ability to attract gamers to Steam through its first-party game offerings also contributed to the platform’s ability to attract third-party developers (that is, build network effects). As I note above, other publishers have attempted to utilize a similar model to build their own digital PC game distribution platforms. I thus model the but-for market shares for Valve as well as the publishers that engaged in digital PC game distribution based on the relative success of their games on Steam. To quantify the success of publishers’ games, I use a given publisher’s share of revenues on Steam among the publishers that have attempted to create distribution platforms as a proxy for the market share of their platforms in the but-for world.”).

²³² Schwartz Deposition, pp. 54–55 (“Q. If Epic Games owns the publisher of Fall Guys, does that make it a first-party sale, in your lexicon ... A. If all they sell is their games, then that’s first-party distribution. It becomes third-party distribution when they sell games from other distributors. That’s the distinction that I’m drawing. And so it’s the -- what is excluded from the relevant market is the pure first-party distributor.”).

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Blizzard) than are games in the “sports” genre such as *FIFA 23* (published by EA).²³³ However, Dr. Schwartz includes sales of *Call of Duty: Modern Warfare II* and *FIFA 23* on Steam in his proposed relevant market but excludes sales of *Half-Life 2*.

98. Consider the implications of Dr. Schwartz’s market definition for some games offered on multiple platforms. Loyal video game users often prefer to play a particular game (rather than switch between games), so they will perceive the different platforms where the game is sold as substitutes. For example, loyal players of EA’s *Madden NFL* franchise will choose between buying those games on Steam or EA’s own distribution platform, the EA App, based on factors like price, gameplay features, and willingness to change platforms.²³⁴ Instead of acknowledging this demand substitution, Dr. Schwartz considers *Madden NFL* sales to be outside his proposed market when sold through the EA platform and inside his proposed market when sold through Steam. As another example, since October 2022, Activision Blizzard has made all titles in its *Call of Duty* franchise available on Steam as well as the publisher’s own distribution platform, Battle.net.²³⁵ Dr. Schwartz considers *Call of Duty* sales to be outside his proposed market when sold through Battle.net, but inside his proposed market when sold through Steam. Similarly, Epic Games’ *Shadow Complex Remastered* is available for purchase on both EGS and Steam.²³⁶ Again, Dr. Schwartz considers *Shadow Complex* sales to be outside his proposed market when sold on EGS, but inside his proposed market when sold through Steam. Dr. Schwartz’s definition makes no economic sense. For all these examples, users can choose which platforms to buy these games from and may switch between alternatives, regardless of whether the platform is first-party.
99. Similarly, Steam keys that are offered on multiple platforms would sometimes, but not always, be considered part of Dr. Schwartz’s proposed relevant market, depending on whether the sale occurred on a third-party key reseller site or a publisher’s own website. That is, Steam keys that are sold on third-party reseller sites would be included in Dr. Schwartz’s proposed market, but the same Steam keys sold by publishers on their own self-distribution platforms would not be. For example, the publisher Square Enix sells Steam keys for some of its games, like *Final Fantasy XII The Zodiac Age*, directly on its

²³³ [REDACTED]

[REDACTED], accessed on May 16, 2024; [REDACTED] accessed on May 16, 2024.

²³⁴ Electronic Arts, “Madden NFL,” available at <https://www.ea.com/games/madden-nfl>, accessed on May 15, 2024 (“Buy Now PlayStation[,] Xbox[,] The EA app for Windows[,] Steam[,] Epic Games Store.”).

²³⁵ Jeffrey Rousseau, “Call of Duty will return to Steam with the launch of Call of Duty: Modern Warfare 2,” *GamesIndustry.biz*, June 8, 2022, available at <https://www.gamesindustry.biz/call-of-duty-will-return-to-steam-with-the-launch-of-call-of-duty-modern-warfare-ii>, accessed on April 17, 2024 (“Today Activision Blizzard revealed that Call of Duty: Modern Warfare 2 will launch on October 28, which includes releasing on Steam. The last title to release on the platform was 2017’s Call of Duty: WWII. All PC titles afterwards launched exclusively via the publisher’s online platform Battle.net. The company said that all games from the franchise will continue to be supported via the service.”). See also, e.g., Call of Duty, “Call of Duty: Modern Warfare III,” available at <https://www.callofduty.com/modernwarfare3/pc>, accessed on April 17, 2024.

²³⁶ Steam, “Shadow Complex Remastered in Now on Mac App Store!” August 4, 2016, available at <https://store.steampowered.com/newshub/app/385560/view/5153763150561188380>, accessed on April 18, 2024 (“ChAIR’s award-winning modern and masterful sidescroller is now downloadable on Mac via the Mac App Store, Epic Games, and Steam.”); Epic Games, “Shadow Complex Remastered,” available at <https://store.epicgames.com/en-US/p/shadow-complex>, accessed on May 1, 2024 (“Epic Games’ cult classic comes to PC in this thrilling remaster.”).

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own website.²³⁷ At the same time, users looking to play this game can also purchase Steam keys for the same game on the Humble Bundle website.²³⁸ Sales of Steam keys for this game through Humble Bundle would be included in Dr. Schwartz’s proposed market since they are third-party sales, while sales of Steam keys for this same game through Square Enix’s website would not since they would be considered first-party sales. This does not make economic sense: from a consumer’s point of view, a Steam key purchased directly from the publisher versus from a Steam key reseller is the same product, and therefore, the two are direct substitutes.

100. Moreover, under Dr. Schwartz’s market definition, whether games are part of the relevant market or not can change if the game’s publisher is acquired by a platform operator, even though the acquisition may have no effect on how consumers substitute between games. For example, Dr. Schwartz describes how Psyonix, publisher of the popular game *Rocket League*, was acquired by Epic Games in 2019.²³⁹ *Rocket League* was then removed from Steam and added on EGS in September 2020.²⁴⁰ Prior to the acquisition of Psyonix, *Rocket League* was part of Dr. Schwartz’s proposed market (a third-party game on Steam), but after the acquisition it was not (a first-party game on EGS). However, from a consumer’s point of view, *Rocket League* is not necessarily less of a substitute to other games in the proposed market after the acquisition than before. Similarly, Tonic Games Group, the publisher of *Fall Guys*, was also acquired by Epic Games in 2021 and ultimately removed from Steam.²⁴¹ Sales of *Fall Guys* would have been considered part of Dr. Schwartz’s proposed relevant market prior to Tonic Games Groups’ acquisition and outside his proposed relevant market after the acquisition.²⁴² I note that, in the extreme, Dr. Schwartz’s market definition implies that sales of a game within a given distribution platform can suddenly leave the relevant market if at some point the platform operator acquires the publisher of the game.

²³⁷ Square Enix Store, “Final Fantasy XII The Zodiac Age,” available at <https://na.store.square-enix-games.com/final-fantasy-xii-the-zodiac-age>, accessed on April 17, 2024.

²³⁸ Humble Bundle, “Final Fantasy XII The Zodiac Age,” available at <https://www.humblebundle.com/store/final-fantasy-xii-the-zodiac-age>, accessed on April 17, 2024.

²³⁹ Schwartz Report, ¶ 305 (“In 2019, Epic acquired Psyonix, the developers of Rocket League.”).

²⁴⁰ Max Parker, “Rocket League Free to Play Arrives September 23,” *Rocket League*, September 15, 2020, available at <https://www.rocketleague.com/en/news/rocket-league-free-to-play-arrives-september-23>, accessed on May 1, 2024 (“In addition to joining the Epic Games Store, *Rocket League* will also be joining Epic’s Support-A-Creator Program”); Rocket League, “Rocket League Going Free to Play This Summer,” July 21, 2020, available at <https://www.rocketleague.com/en/news/rocket-league-going-free-to-play-this-summer>, accessed on May 16, 2024 (“Once Rocket League goes free to play, anyone who already owns Rocket League on any platform (including Steam) will be able to play and enjoy the game with full support for future updates and features. However, the Steam version will no longer be available to download for new players.”).

²⁴¹ Schwartz Report, ¶ 305 (“In 2021, Epic acquired Tonic Games Group, the developers of Fall Guys.”); CJ Wheeler, “Fall Guys goes free to play but exclusive to Epic Games Store from today,” *Rock Paper Shotgun*, June 21, 2022, <https://www.rockpapershotgun.com/fall-guys-goes-free-to-play-but-exclusive-to-epic-games-store-from-today>, accessed on May 15, 2024 (“However, Fall Guys has also been removed from sale on Steam so it can become an Epic Games Store exclusive.”).

²⁴² Dr. Schwartz appears to concede in deposition that it would not make sense for sales of *Fall Guys* to have been considered part of the proposed market prior to the acquisition and outside of the proposed market after the acquisition. Schwartz Deposition, pp. 54–55 (“Q. If Epic Games owns the publisher of Fall Guys, does that make it a first-party sale, in your lexicon ... A. If all they sell is their games, then that’s first-party distribution. It becomes third-party distribution when they sell games from other distributors. That’s the distinction that I’m drawing. And so it’s the -- what is excluded from the relevant market is the pure first-party distributor.”).

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101. As Dr. Schwartz’s deposition testimony highlights, these inconsistencies in including or excluding sales from the proposed market defy economic logic and underscore the flaws in excluding first-party distribution. Consumers generally substitute between first- and third-party games, as made evident by the history of Steam and many other industry participants. As discussed in Section 2, many third-party platforms, including Steam, began as first-party platforms. When Steam began offering third-party games on its platform, customers likely regarded those newly listed third-party games as alternatives to the first-party games already on Steam and substituted some of their time from playing Valve games like *Half-Life* to trying out third-party games. This further underscores the flaws in excluding first-party distribution.
102. Fourth, **the proposed market definition Dr. Schwartz puts forward in his report is inconsistent with industry realities and how industry participants and research firms describe the industry.** As Dr. Schwartz notes, many successful third-party platforms—including those from Activision Blizzard, Bethesda, CD Projekt, EA, Epic Games, Microsoft, Rockstar Games, and Ubisoft—also offer first-party games in addition to games by other publishers.²⁴³ While Dr. Schwartz testified at deposition that his proposed market definition excludes only first-party platforms, in his report, he attempts to separate publishers’ revenues into first-party and third-party categories to calculate revenues relevant to his proposed market.²⁴⁴ He then excludes first-party revenues from his proposed market, even though all revenues originate from sales of the same product (video games) to the same consumer base. Moreover, as discussed above, many of these platforms started as first-party platforms—which Dr. Schwartz excludes entirely from his proposed market definition—before offering games from other publishers, which partially enter Dr. Schwartz’s proposed market definition as stated in his report.
103. Dr. Schwartz’s proposed market definition is also inconsistent with the way industry participants and research firms define the industry. For example, Newzoo is a leading industry research firm that specializes in video games and gamer data.²⁴⁵ I note that Plaintiffs also rely on market research data from Newzoo in their Complaint, but Dr. Schwartz does not use those data in his calculation of Valve’s alleged market share.²⁴⁶

²⁴³ Schwartz Report, ¶ 372 (“These publishers include Activision (battle.net), Bethesda (Bethesda.net), CD Projekt (GOG), EA (Origin), Epic (EGS), Microsoft (Microsoft Store), Rockstar (Rockstar Games Launcher), and Ubisoft (Uplay).”). I note that, as discussed in Section 2.3, Bethesda discontinued its launcher on May 11, 2022. Therefore, it operated as a first-party platform for most, but not all, of the Class Period.

²⁴⁴ Schwartz Report, Footnote 383 (“For purposes of my market share analysis, I consider revenues from the entire third-party transaction value of user sales on a given service ... For Steam, Epic Games Store, Humble Bundle, Target, Best Buy, and the Microsoft Store, I rely on financials produced by each party in this matter, limiting them to third-party sales only ... For Ubisoft Connect (f/k/a Uplay), Green Man Gaming, and GamersGate, I rely on an EGS presentation, which calculates 2018 and 2019 third-party revenues for various companies.”).

²⁴⁵ Newzoo, “About Newzoo,” available at <https://newzoo.com/about>, accessed on April 18, 2024.

²⁴⁶ See, e.g., Complaint, ¶¶ 99 (“According to a market researcher”), 116 (“In the below market summary, the website NewZoo breaks the ‘Global Games Market’ into three categories: PC games (including both desktop and non-desktop, e.g., browser-based), console games, and mobile games”); Schwartz Report, ¶¶ 103 (“A 2023 report conducted by Newzoo includes survey responses from over 42,000 PC and/or console video game players and indicates that approximately 6% of respondents played games on both PCs and consoles, and 23% of respondents played games on PCs, consoles, and mobile devices.”), 104 (“A 2023 Newzoo industry report shows that twelve of the top twenty “free-to-play” games released in 2022 were available on PC only, consistent with a free-to-play or freemium model being more successful among PC video game consumers than console video game consumers”); Rietveld Report, ¶¶ 27 (“Newzoo, a provider of video game industry data and analysis, estimated that there were approximately 3.38 billion video game players worldwide in 2023, with approximately 237 million of those players residing

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██████████²⁴⁷ Similarly, industry participants such as Microsoft do not delineate between these revenues for digital PC gaming revenue either.²⁴⁸ Dr. Schwartz conceded at deposition that he was not aware of any industry recognition that first-party distribution is a delineated market or submarket.²⁴⁹ These inconsistencies underscore the impropriety of Dr. Schwartz excluding first-party distribution from his proposed relevant market.

104. To the extent that Dr. Schwartz testified that his proposed market definition *does not* exclude first-party distribution on third-party platforms and only excludes “pure” first-party platforms, Dr. Schwartz appears to concede that the proposed market sizes and market shares he calculates in his report inappropriately exclude first-party distribution on third-party platforms.

105. **Finally, Dr. Schwartz’s reasons for excluding first-party distribution from his proposed relevant market are flawed.** Dr. Schwartz claims that first-party distribution should be excluded from his proposed relevant market for several reasons: he argues that the development of first-party platforms is costly, and as a result, many publishers do not pursue first-party distribution or are unsuccessful if they do; he asserts that games on first-party platforms are different from other PC games; and he argues that Valve does not view first-party platforms as competitors.²⁵⁰ However, his reasons are either irrelevant for determining market definition or lack economic basis.

in North America.”), 73 (“According to a 2022 Newzoo survey, 72% of the total online U.S. population are ‘game enthusiasts.’”). See Schwartz Report, Attachment E-1 for Dr. Schwartz’s calculation of Valve’s alleged market share.

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²⁴⁹ Schwartz Deposition, p. 87 (“Q. I didn’t see any evidence in your report that the industry recognizes first-party game distribution as a market or a submarket. Is it correct that you didn’t cite any? A. I don’t recall that there is evidence of industry recognition one way or the other about third party or first party, I don’t believe there’s any evidence one way or the other on that that I recall seeing. And if there’s no evidence of it, I wouldn’t have referenced it.”).

²⁵⁰ Schwartz Report, ¶¶ 78–86 (“Developing a distribution platform is costly ... it is difficult for a *single* publisher to entice gamers to move to a standalone platform ... Users want access to the platforms that have the most games and other users. Those publishers who have attempted to launch first-party distribution platforms have generally been unsuccessful ... Several publishers operate platforms to distribute single games, such as Roblox (*Roblox*) and Mojang Studios (*Minecraft*). While these are first-party platforms (or self-publishing), these platforms differ from typical first-party platforms because both *Roblox* and *Minecraft* encourage the creation of in-game content by users to be consumed by other users ... The interaction of users on these platforms thus differs from other first-party digital PC game distribution platforms ... In 2018, Activision Blizzard had removed its *Call of Duty* game from Steam and made it exclusive to its distribution platform Battle.net, but it reversed course in 2022 and released it back on Steam ... I have not seen evidence that Valve regards these first-party distribution platforms as meaningful competitive threats. This suggests that Valve does not see them as substitutes.”); Schwartz Deposition, pp. 45–46 (“Q. And is it fair to say that Steam is competing with Epic Games Store and Rockstar’s launcher for the sale of that game? A. I don’t think so. I think when you go outside of third-party distribution, there’s no evidence of sufficient switching on the part of the developers who are bringing the games to market or on the part of consumers between third-party and first-party distribution to suggest that they are strong enough substitutes to be in the relevant market. So they are alternatives but they are not sufficient economic substitutes to be in the market.”), 47–48 (“Q. In your opinion, what makes them not close substitutes? ... A. ... For developers, first-party distribution is not a viable option for a sufficient number of developers as to represent a competitive threat to Steam. Put differently, there aren’t enough developers who are able to reject third-party distribution for first-party distribution to threaten Steam’s ability to offer customers a desirable array of games, so it’s not a sufficiently close substitute as to engender a competitive response.”).

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106. I agree that not all publishers pursue first-party platforms. However, this fact, in and of itself, is an improper reason for excluding first-party distribution from a proposed relevant market.²⁵¹ Dr. Schwartz fails to explain why this evidence is relevant for defining his proposed market—specifically, he does not explain how this reveals the extent to which publishers would switch to self-distribution in response to changes in revenue share on Steam. However, the fact that only some publishers choose to develop first-party platforms, while not an argument to exclude those platforms from Dr. Schwartz’s proposed relevant market, is important for assessing class-wide harm. This is in part because, as Dr. Schwartz notes, publishers vary in their ability to incur the costs associated with developing a first-party platform, and the type and success of the games a publisher offers plays a large role in determining whether that publisher will succeed in launching a first-party platform.²⁵² Another reason is that the costs associated with developing a first-party platform may vary across publishers, depending on what type of first-party platform they choose to develop. For example, the publisher Ironmace maintains a website for its game *Dark and Darker*, which simply allows users to purchase the game and download the launcher.²⁵³ By contrast, other publishers, like Activision Blizzard, maintain more complex first-party platforms such as Battle.net.²⁵⁴ As discussed further in Section 6.2, evaluating these differences across publishers requires individualized inquiry.

107. Dr. Schwartz notes in his report that some publishers distribute their games on their own platforms (as first-party games) in addition to distributing their games on Steam.²⁵⁵ I agree. However, individualized inquiry would be necessary to properly identify which members of the proposed class distribute their games through first-party platforms and to what extent. This is particularly true of publishers who may not offer first-party platforms with comprehensive features but instead maintain websites for self-distribution. For example, Wolfire maintains a website for its game *Overgrowth*, which simply allows users to purchase the game through the use of a Humble Widget.²⁵⁶ Such websites can be an important distribution alternative for the publisher and an important purchase alternative for consumers. In order to exclude first-party distribution from the market, as Dr. Schwartz does in his report, or to exclude first-party platforms, as Dr. Schwartz stated in his deposition is appropriate, individualized inquiry would be

²⁵¹ Moreover, even if it were true that few publishers offer their games on first-party platforms, they may represent a substantial amount of consumer spending and revenue that Dr. Schwartz ignores by excluding first-party platforms from his proposed market.

²⁵² Schwartz Report, ¶ 79 (“Unsurprisingly, publishers who have created first party digital PC game distribution platforms are predominantly large and have the resources and popularity to support their own platform.”).

²⁵³ Ironmace, “Shop: Dark and Darker,” available at <https://darkanddarker.com/shop>, accessed on May 14, 2024 (“PURCHASE NOW ... LAUNCHER DOWNLOAD.”).

²⁵⁴ Battle.net, “Download Battle.net for Windows and Mac,” available at <https://download.battle.net/en-us/desktop>, accessed on April 25, 2024 (“Launch your games, connect with friends, and keep up-to-date with the latest news ... Get access to games like Overwatch 2, Call of Duty: Warzone 2.0, and free trials for many other titles.”).

²⁵⁵ Schwartz Report, Footnote 249 (“Similarly, a publisher could consider self-publishing via the web rather than building an entirely new platform. This self-publishing is less difficult than building a platform, and thus is more accessible to smaller publishers. However, for both publishers and users, this is not a sufficiently comparable method for distribution. For publishers, access to users is uncertain, at best, when publishing without a platform.”).

²⁵⁶ Wolfire Games, “Buy Overgrowth,” available at <https://overgrowth.wolfire.com/buy-now/>, accessed on May 13, 2024 (“BUY OVERGROWTH ON HUMBLE BUNDLE.”).

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required to assess whether sales through these websites would constitute first-party sales or third-party sales and whether these websites constitute first-party platforms.

108. Contrary to an additional claim made by Dr. Schwartz, the types of games offered on first-party platforms that distribute single games are similar to those offered on third-party platforms. As evidence for his assertion that first-party platforms that offer single games and third-party platforms offer different types of games, Dr. Schwartz discusses the examples of *Roblox* and *Minecraft*, which are both distributed solely on first-party platforms.²⁵⁷ Dr. Schwartz argues that these two games focus on user-generated content in a way that is distinct from games offered on third-party platforms.²⁵⁸ However, many popular games distributed on Steam and other third-party platforms *do* rely on user-generated content (such as *Garry’s Mod* and *Terraria*).²⁵⁹ In fact, Dr. Schwartz conceded in deposition that whether a game offers user-generated content is not a determining factor in whether the game is part of his proposed market.²⁶⁰
109. Dr. Schwartz’s claim that Valve does not view first-party platforms as competitors is at odds with the evidence. For example, internal Valve emails that Dr. Schwartz cites in his report indicate that Valve’s Tom Giardino hoped that Valve’s 2018 introduction of revenue tiers would entice Activision Blizzard to distribute its games on Steam. Mr. Giardino said he would “love to show up at Activision in November with a ‘bring us

²⁵⁷ Kyle Wilson, “How to download Roblox on a Windows PC and join millions of users on the gaming platform,” *Business Insider*, November 5, 2021, available at <https://www.businessinsider.com/guides/tech/roblox-download-pc>, accessed on May 1, 2024 (“If you are interested in checking out [Roblox], you will have to install it. Here is how to install (and play) Roblox on a Windows PC ... G to Roblox.com ... Click on the Download and Install Roblox button that appears. This will download the installation file to your computer.”); Minecraft, “I Want to Buy Minecraft on a Windows 10/11 Device,” available at <https://help.minecraft.net/hc/en-us/articles/6660924652557-I-Want-to-Buy-Minecraft-on-a-Windows-10-11-Device>, accessed on May 1, 2024 (“HOW TO GET MINECRAFT THROUGH THE MICROSOFT STORE ... Both the Minecraft Launcher and Minecraft for Windows will install ... HOW TO GET MINECRAFT THROUGH MINECRAFT.NET ... After the download, you can open the Minecraft Launcher.”).

²⁵⁸ Schwartz Report, ¶ 81 (“Several publishers operate platforms to distribute single games, such as Roblox (*Roblox*) and Mojang Studios (*Minecraft*). While these are first-party platforms (or self-publishing), these platforms differ from typical first-party platforms because both *Roblox* and *Minecraft* encourage the creation of in-game content by users to be consumed by other users. *Roblox* allows users that develop in-game content to offer it for sale to other users via its Marketplace. *Minecraft* similarly allows users that develop in-game content to offer it for sale to other users via the *Minecraft* DLC Marketplace.”).

²⁵⁹ *Terraria* has sold almost 45 million copies as of April 2022 and is listed as one of the best-selling games of all time. *Garry’s Mod* has sold 20 million copies as of 2021. See Ken Allsop, “Terraria ‘still sells like hot cakes, it makes it hard to move on,’” *PCGamesN*, July 1, 2023, available at <https://www.pcgamesn.com/terraria/sales-hot-cakes>, accessed on April 18, 2024 (“The last sales update from Re-Logic proves his point; back in May, the team announced that they’d hit 44.5 million units sold, comfortably reaffirming its place as one of the best-selling games of all time.”); Shaun Prescott, “Garry’s Mod has sold 20 million copies,” *PC Gamer*, September 7, 2021, available at <https://www.pcgamer.com/garrys-mod-has-sold-20-million-copies/>, accessed on April 18, 2024 (“Now, in 2021, Garry’s Mod has sold an astounding 20 million copies.”). Moreover, both *Garry’s Mod* and *Terraria* rely on user-generated content such as mods. See Katelin McDougald, “Garry’s Mod: 10 Best Mods of All Time,” *The Gamer*, August 25, 2022, available at <https://www.thegamer.com/garrys-mod-best-mods/>, accessed on April 17, 2024 (“Despite Garry’s Mod having been launched in 2006, the game still has one of the most active modding communities ... There are hundreds of thousands of mods available for the game, as people keep creating and sharing new content”); Gina Lees, “The Best Terraria mods 2024,” *PCGamesN*, available at <https://www.pcgamesn.com/terraria/mods-best>, accessed on April 18, 2024 (“One of the best crafting games available, Terraria has a lot of content to sink your pickaxe into. These Terraria mods add even more possibilities, including beefier boss battles, new biomes to explore, and fresh items to tinker with, which allows Terraria to go toe-to-toe with the best PC games around today.”).

²⁶⁰ Schwartz Deposition, p. 78 (“Q. Does it make a difference as to whether a game is in the relevant market as you define it as to whether it supports user-generated content or not? A. Well, the relevant market, to be clear, is comprised of distribution platforms. If you are asking me whether a game that is sold through a third-party distribution platform and contains the ability for users to generate content would be in or out of the relevant market, I don’t think whether or not it generates user -- whether users can generate content is a determining factor if the game is distributed through a third-party distributor.”).

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Destiny 3 and Call of Duty 2019’ pitch.”²⁶¹ Valve employees have also testified that the revenue share tiers change was designed to entice many publishers, including EA, Riot Games, and Mojang Studios, who distributed games on their first-party sites, to Steam.²⁶² I therefore find that Dr. Schwartz’s argument that Valve does not view first-party platforms as competitors is not supported by the evidence or economic theory.

110. For all these reasons, I find that first-party distribution, both by first-party platforms and third-party platforms, represents a critical source of competition for digital third-party gaming platforms; Dr. Schwartz’s analysis improperly excludes first-party distribution from his proposed relevant product market.

3.1.2. Dr. Schwartz improperly excludes console game sales from his proposed relevant market

111. Dr. Schwartz excludes console sales from his proposed market.²⁶³ In this section, I explain that Dr. Schwartz’s decision to exclude console platforms from his proposed relevant market is at odds with the evidence. Moreover, rather than engage with the data on game availability, or the evidence regarding how industry participants view the market, Dr. Schwartz appears to justify his decisions to exclude consoles primarily based on reasons relating to technical compatibility, rather than more economically relevant reasons based on substitution.

112. **First, Dr. Schwartz ignores the substantial overlap in titles playable on PCs and consoles.** Individual developers develop titles for both consoles and PCs, and individual consumers purchase titles on both consoles and PCs. This overlap is widespread to the point that an industry participant told the U.K. Competition and Markets Authority that “most third parties publish their content on PC[s] and console[s].”²⁶⁴ The overlap is also observed in the data. For example, [REDACTED]

[REDACTED].²⁶⁵

113. This overlap is evident among the most popular titles. Exhibit 2 summarizes the 10 best-selling games in 2022 in the U.S. on PC, Xbox, and PlayStation.
114. The exhibit shows substantial overlap in the most popular content on PCs and consoles. Of the top 10 games on PC, seven are also available on consoles. Nine of the top 10 PlayStation titles and all of the top 10 Xbox titles are available on PC. Three of the top-selling games in 2022, including [REDACTED] appear in the top 10 list for all three platforms—PC, PlayStation, and Xbox.

²⁶¹ Email chain from Kristian Miller to Tom Giardino, “RE: Rev Share Change on Past Year Titles,” October 2, 2018, VALVE_ANT_2392320–323 at 321 (“**Subject:** Re: Rev Share Change on Past Year Titles ... HUGE IF TRUE!1! Many thanks for sending the deck, I’ll take a look. Wou[l]d love to show up at Activision in November with a ‘bring us Destiny 3 and Call of Duty 2019’ pitch.”); Schwartz Report, Footnote 245.

²⁶² Lynch 30(b)(6) Deposition, p. 113 (“Q. And you wanted to bring people like EA back to the platform? A. Well, we wanted -- it was -- it was not only people like EA. It was, you know, there were -- you know, independent developers that, you know, had made hit games and just had never ever come to Steam. So it was like, you know, Riot, League of Legends. It was like Minecraft -- God, we wanted Minecraft. Hell, it was like Fortnite.”).

²⁶³ Schwartz Report, ¶ 97 (“I also consider whether distribution services for games to be played on consoles (e.g., PlayStation, Xbox, etc.) are substitutes for PC-gaming distribution services. They are not.”).

²⁶⁴ CMA MS-ABK Final Assessment, Section 5.37.

²⁶⁵ Workpaper 13.

Exhibit 2

[illegible]

115. While Exhibit 2 summarizes the overlap for the top 10 games available on PC and consoles, the overlap also holds for games available on Steam specifically. Of the top 10 games available on Steam in 2022, eight are also available on PlayStation and/or Xbox. These eight games account for █ percent of all revenue on Steam in 2022. Moreover, the overlap between PC and console games holds true beyond the most popular games. For example, of the top 100 games available on Steam in 2022, 78 are available on PlayStation and/or Xbox. These 78 games account for █ percent of all revenue on Steam. For the top 500 games on Steam, 342 are available on PlayStation and/or Xbox, and these 342 games account for █ percent of all revenue on Steam.²⁶⁷
116. **Second, Dr. Schwartz's exclusion of console platforms from his proposed market is inconsistent with the way industry participants make business decisions.** Console manufacturers observe substitution between PCs and consoles in the ordinary course of business and make business decisions in response to competition from PC platforms. In a 2016 interview, Andrew House, Sony Interactive Entertainment's CEO, explained that consoles face strong competitive pressure from

²⁶⁷ Workpaper 14. Note that the top games on Steam in 2022 are based on revenue including both package sales and microtransaction sales. To determine whether or not a game is available on PlayStation or Xbox, I manually reviewed the [REDACTED] data for each game. If the game does not exist in the [REDACTED] data, I conservatively assume that the game is unavailable on PlayStation and Xbox.

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PCs, especially in the middle of a console cycle, and that Sony developed the PS4 Pro mid-cycle to better respond to the competitive pressure from PC gaming:²⁶⁸

“I saw some data that really influenced me. It suggested that there’s a dip mid-console lifecycle where the players who want the very best graphical experience will start to migrate to PC, because that’s obviously where it’s to be had. We wanted to keep those people within our eco-system by giving them the very best and very highest [performance quality]. So the net result of those thoughts was PlayStation 4 Pro.”

117. As another example, Microsoft made business decisions in response to competition from PCs. For example, Microsoft now sells its PC games in the Xbox App for Windows PC, acknowledging consumer substitutability between consoles and PC.²⁶⁹ Microsoft advertises hundreds of “play anywhere” titles that, once purchased on a PC, can be played on Xbox, and vice versa.²⁷⁰ In addition, games in Xbox’s subscription service known as Game Pass are accessible on both PCs and consoles. One tier of this service, Game Pass Ultimate, allows users to access a downloadable library of titles on both consoles and PCs.²⁷¹
118. Valve reciprocally views console platforms as an important source of competition to Steam. Several Valve witnesses, including Gabe Newell and Scott Lynch, testified that Valve views Steam to be competing with Xbox and PlayStation platforms as well.²⁷² This is consistent with the evidence Professor Rietveld cited that more than half (53 percent) of U.S. PC gaming users and just under half (44 percent) of worldwide PC gaming users also play video games on consoles and therefore have consoles available to them.²⁷³
119. Moreover, **Dr. Schwartz fails to consider the ways in which Valve develops products to directly compete with console platforms.** For example, Steam competes with the Nintendo Switch through Valve’s Steam Deck, a handheld gaming PC.

²⁶⁸ Keith Stuart, “PlayStation boss on PS4 Pro: our approach isn’t reactive this time around,” *The Guardian*, September 8, 2016, available at <https://www.theguardian.com/technology/2016/sep/08/playstation-boss-andrew-house-ps4-pro-our-approach-isnt-reactive-this-time-around>, accessed on April 18, 2024.

²⁶⁹ Xbox, “Xbox app for Windows PC,” available at <https://www.xbox.com/en-US/apps/xbox-app-for-pc>, accessed on April 18, 2024 (“Discover and download new games with Game Pass, play console games on your Windows PC with cloud gaming, and chat with friends across PC, mobile, and console.”).

²⁷⁰ Xbox, “Xbox Play Anywhere,” available at <https://www.xbox.com/en-US/games/xbox-play-anywhere>, accessed on December 7, 2023 (“Now when you own an Xbox Play Anywhere digital title, it’s yours to play both on Xbox and Windows 10/11 PC.”).

²⁷¹ Xbox, “Game Pass Ultimate,” available at <https://www.xbox.com/en-US/xbox-game-pass/ultimate>, accessed on April 18, 2024 (“Play hundreds of high-quality games solo or with friends on console, PC, or cloud.”).

²⁷² Deposition of Gabe Newell (Valve), November 21, 2023 (“Newell Deposition”), pp. 115 (“And Steam operates in a highly competitive marketplace. Similarly, customers have enormous choice in how they -- where they purchase their products, whether they buy the game on an Xbox, whether they buy it on Steam, whether they buy it on Epic Games Store or whether they buy it directly from software developers, right.”), 169 (“We had conversations with third-party software developers about what would allow us to be a competitive platform given the wide range of distribution options they had, selling it themselves, selling it through retailers, selling it through other digital distribution services or selling it through other providers like the Xbox, Nintendo Switch or Sony PlayStation.”); Lynch Deposition, p. 166 (“Q. (By Mr. Siebert) And for instance, you mentioned that many consumers may have access to both; right? A. Sure. Yes. Q. Same thing with Game Pass? A. Yes. And Xbox and PlayStation.”).

²⁷³ Rietveld Report, pp. 68–69, Table 2 (“Play on PC ... Also play on console ... % of U.S. PC Players ... 53%”), Table 3 (“Play on PC ... Also play on console ... % of WW PC Players ... 44%”); Rietveld Deposition, p. 145 (“Q. So about what percentage of PC video game players in the U.S. also plays on consoles? A. Here it says -- PC players, right, not all players? Fifty-three percent. Q. Fifty-three percent. Does that suggest that more than half of USP C [sic] game players have a console available to them? A. I would say so.”).

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Users regularly switch between their desktop PC and a handheld device such as the Switch and the Steam Deck.²⁷⁴

120. In 2017, Nintendo launched the Switch, a hybrid gaming console that can be played as either a portable, handheld device or connected to a TV through a dock.²⁷⁵ In 2021, Valve announced the Steam Deck, a hybrid gaming PC that can be played as either a portable, handheld device or connected to a TV through a dock.²⁷⁶ Both products are shown below in Exhibit 3.
121. The Switch and the Steam Deck are direct competitors. The similarities between these products are described by reviews in gaming publications and the general press, which often make the comparison directly. Articles similarly refer to the Steam Deck as a “Switch-like device,”²⁷⁷ and there is some overlap in the games offered on Steam and on the Switch.²⁷⁸
122. Several publications present the Switch and Steam Deck as direct substitutes:
 - a. “Valve Steam Deck vs Nintendo Switch OLED: What should you buy?”²⁷⁹
 - b. “Steam Deck vs. Switch: Valve’s portable gaming PC is impressive, but Nintendo’s handheld is the best option for most gamers.”²⁸⁰

²⁷⁴ Gerald Lynch, “Nintendo Switch 2’s biggest competition isn’t PS5 or Xbox – it’s portable PCs,” *TechRadar*, February 22, 2023, available at <https://www.techradar.com/features/nintendo-switch-2s-biggest-competition-isnt-ps5-or-xbox-its-portable-pcs>, accessed on April 18, 2024 (“King of portable gaming: it was a crown that Nintendo seemed destined to wear in perpetuity when the Nintendo Switch launched in early 2017 ... Jump to the year 2022, and Valve’s Steam Deck is revealed. It’s a beast ... Nintendo now has PC/console hybrid manufacturers tracking it in their sights, leveraging the form factor that Nintendo had pioneered and had made the Switch so compelling ... But the fact remains - the Switch as a hardware concept has been played, probed, and perfected, and not by Nintendo.”); Chaim Gartenberg, “How does Valve’s Steam Deck compare to the Nintendo Switch, Xbox Series X, and PlayStation 5?” *The Verge*, July 15, 2021, available at <https://www.theverge.com/2021/7/15/22578917/valve-steam-deck-nintendo-switch-xbox-series-x-ps5-spec-comparison>, accessed on April 18, 2024 (“The most obvious comparison for the Steam Deck is, of course, Nintendo’s Switch – particularly the upcoming OLED model – which offers a similar handheld configuration, screen size, and design. Both devices features 720p touchscreen displays, too ... But given that the two handhelds are closest together in form factor and price, it’s still worth looking at them side by side – especially considering that even with the gap in performance, they’re far closer to each other than the dramatically more powerful Xbox Series X and PlayStation 5.”); Chris Brandrick, “The State of Switch 2024,” *Switch Weekly*, April 28, 2024, available at <https://switchweekly.com/survey/2024>, accessed on May 14, 2024 (“I asked Switch owners what other systems they currently own ... 15% said they own the Steam Deck. Of those who picked up a Steam Deck, a sizeable 88% said that their buying habits have changed – and they are now purchasing more games on Steam compared to the eShop.”).

²⁷⁵ Nintendo, “Nintendo Switch,” available at <https://www.nintendo.com/switch/system/>, accessed on April 18, 2024.

²⁷⁶ Ryan Gilliam and Samit Sarkar, “Valve announces Steam Deck handheld for PC games,” *Polygon*, July 15, 2021, available at <https://www.polygon.com/22578782/steam-deck-handheld-valve-release-date-price>, accessed on April 18, 2024.

²⁷⁷ Ryan Gilliam and Samit Sarkar, “Valve announces Steam Deck handheld for PC games,” *Polygon*, July 15, 2021, available at <https://www.polygon.com/22578782/steam-deck-handheld-valve-release-date-price>, accessed on April 18, 2024 (“The Steam Deck is a new handheld device from Valve for playing PC games on the go, the company announced Thursday. The Nintendo Switch-like device is set for release in December starting at \$399.”).

²⁷⁸ For example, *Portal* and *Portal 2* are two games published by Valve and that are offered on Steam that users can also play on the Switch. See Steam, “Portal,” available at <https://store.steampowered.com/app/400/Portal/>, accessed on April 18, 2024; Nintendo, “Portal,” available at <https://www.nintendo.com/us/store/products/portal-switch/>, accessed on April 18, 2024; Steam, “Portal 2,” available at https://store.steampowered.com/app/620/Portal_2/, accessed on April 18, 2024; Nintendo, “Portal 2,” available at <https://www.nintendo.com/us/store/products/portal-2-switch/>, accessed on April 18, 2024.

²⁷⁹ Marshall Honorof, “Valve Steam Deck vs Nintendo Switch OLED: What should you buy?” *Tom’s Guide*, March 8, 2022, available at <https://www.tomsguide.com/news/valve-steam-deck-vs-nintendo-switch-oled>, accessed on April 18, 2024.

²⁸⁰ Kevin Webb, “Steam Deck vs. Switch: Valve’s portable gaming PC is impressive, but Nintendo’s handheld is the best option for most gamers,” *Business Insider*, December 9, 2022, available at <https://www.businessinsider.com/guides/tech/steam-deck-vs-nintendo-switch>, accessed on April 18, 2024.

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- c. “Can’t decide between the Switch and Steam Deck? Here’s what you should know.”²⁸¹
- d. “Nintendo Switch OLED vs. Steam Deck OLED: Which handheld is better?” and “Competition among portable consoles is the fiercest it’s ever been.”²⁸²
- e. “Steam Deck OLED vs. Steam Deck LCD vs. Switch OLED: How they all stack up.”²⁸³

Exhibit 3***Steam competes directly with consoles on content and functionality***

Source: Mike Andronico, “Valve Steam Deck versus Nintendo Switch OLED: Which should you buy?” *CNN Underscored*, March 29, 2022, available at <https://www.cnn.com/cnn-underscored/electronics/valve-steam-deck-vs-nintendo-switch-oled>, accessed on April 18, 2024. Note: Image from review compares Nintendo Switch OLED (left) and Valve’s Steam Deck (right).

123. The Steam Deck is not only a substitute with the Nintendo Switch, but with other consoles as well. [REDACTED]

[REDACTED]²⁸⁴

²⁸¹ Joanna Nelius, “Can’t Decide Between the Switch and Steam Deck? Here’s What You Should Know,” *USA Today Reviewed*, February 21, 2023, available at <https://reviewed.usatoday.com/laptops/features/nintendo-switch-vs-steam-deck>, accessed on April 18, 2024.

²⁸² Alex Perry, “Nintendo Switch OLED vs. Steam Deck OLED: Which handheld is better?” *Mashable*, December 8, 2023, available at <https://mashable.com/article/nintendo-switch-oled-vs-steam-deck-oled>, accessed on April 18, 2024.

²⁸³ Taylor Lyles, “Steam Deck OLED vs. Steam Deck LCD vs. Switch OLED: How They All Stack Up,” *IGN*, November 9, 2023, available at <https://www.ign.com/articles/steam-deck-oled-vs-steam-deck-lcd-vs-switch-oled>, accessed on April 18, 2024.

²⁸⁴ [REDACTED]

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124. Individual Steam users frequently divide their time between the Steam Deck and other gaming PCs. They substitute one for the other at different times. In an interview, Valve designer Lawrence Yang said that 42 percent of people who purchase a Steam Deck spend the majority of their Steam gaming time on it instead of a PC or their other devices.²⁸⁵ This type of substitution between the Steam Deck (a direct competitor to the Nintendo Switch) and other PC gaming devices is consistent with PC gaming and console gaming operating as close substitutes.
125. Finally, **Dr. Schwartz’s rationale for excluding console distribution from his proposed relevant market is flawed.** Plaintiffs and Dr. Schwartz claim that console platforms should be excluded from Dr. Schwartz’s proposed relevant market for several reasons: technical differences between PC and console gaming and the cost to publishers of developing games on console platforms; the presence of publishers who opt to publish only on PC or only on console; and the cost of PC and console gaming for users.²⁸⁶ However, these reasons are either irrelevant for determining market definition or lack economic basis.
126. Dr. Schwartz’s and Plaintiffs’ claims about technical compatibility and porting a game from one platform to another are not sufficient to establish that consoles do not compete with PC platforms. First, the fact that “[a] video game developed for use on a PC (console) is not readily distributable on a console (PC)” is not evidence of PC and console platforms not being in the same market because it ignores publishers’ decisions regarding where to first publish a game.²⁸⁷ Second, as discussed in Section 6.1, many publishers opt to offer their games on *both* PC and console platforms despite the cost of porting a game from one platform to another, and these publishers offer popular games that generate substantial revenue. Additionally, publishers can use the services offered by game engines, like Unity, to concurrently develop their games for PC and console platforms, thereby reducing the technical barriers to developing games across both

²⁸⁵ James Archer, “The community continues to blow our minds’: Valve talk the Steam Deck, one year on,” *Rock Paper Shotgun*, March 7, 2023, available at <https://www.rockpapershotgun.com/the-community-continues-to-blow-our-minds-valve-talk-the-steam-deck-one-year-on>, accessed on April 18, 2024 (“The biggest surprise for me has been seeing how Steam Deck has changed the way people are playing their games. One thing we’ve learned recently is that of the people who’ve purchased a Steam Deck, 42% of them end up spending the majority of their Steam gaming time on Steam Deck – preferring it over their other devices.”).

²⁸⁶ Complaint, ¶¶ 96 (“Along with better visual effects, PCs offer more immersive and customizable control options for gamers.”), 101 (“Gamers make deliberate choices about which hardware systems to utilize, and once that choice is made, they remain on that platform because of lock-in effects.”), 108 (“Additionally, the size of game files helps explain why games on different platforms (PC, console, and mobile) are complements rather than substitutes, and why their distribution channels also are not reasonably interchangeable.”), 109 (“Game developers and publishers incur costs when trying to port their games from one hardware system to the other, including development costs, organizational costs, and quality-control costs.”), 117 (“Games in the non-desktop subcategory above are not substitutable with PC desktop games.”); Schwartz Report, ¶¶ 98 (“Porting a non-console game to be played on console is akin to ‘recreating and almost making a new game[.]’ so such financial and technical constraints separate the PC games market from the console one.”), 99 (“PCs used for games can be (and are) updated more frequently compared to the frequency of console releases.”), 102 (“Put simply, a PC video game developer may not be able to distribute via consoles.”).

²⁸⁷ Schwartz Report, ¶ 98.

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platforms.²⁸⁸ In other words, Plaintiffs’ and Dr. Schwartz’s observations regarding technical compatibility do not limit consoles from placing competitive pressure on PC gaming, and vice versa.

127. Dr. Schwartz also argues that consoles should be excluded from his proposed relevant market because only some publishers have the technical capabilities and resources to distribute their games on both PCs and consoles.²⁸⁹ However, as discussed in Section 6 below, this rationale is flawed: it does not account for the competing options available to a publisher who could switch in response to a change in price on Steam. Instead, the fact that only some publishers distribute their games on both PC and console platforms underscores the need for individualized inquiry to establish harm from the challenged conduct.
128. Therefore, console platforms represent a critical source of competition for digital third-party gaming platforms, and Dr. Schwartz’s analysis improperly excludes them from his proposed market.

3.1.3. Dr. Schwartz improperly excludes physical sales from his proposed relevant market

129. Dr. Schwartz excludes physical sales from his proposed market, both from brick-and-mortar stores and from online retailers.²⁹⁰ In this section, I explain that this exclusion is improper.
130. In excluding physical sales from his proposed market, Dr. Schwartz fails to consider that physical stores have historically been a large part of the video game industry and served as an important early competitor for Steam and other digital distribution platforms globally. As discussed in Section 2.2, in Steam’s early years, Valve primarily competed with physical video game retailers, where both PC and console games were sold on CDs and DVDs in boxes, and in more recent years were also sold through codes such as Steam keys. Physical retailers accounted for a much larger portion of video game consumer spending than Steam for the first several years after Steam’s launch.²⁹¹ Valve competed with physical retailers by offering lower fees, increased pricing flexibility to publishers, the ability to buy a game without leaving home, and reduced set-up time

²⁸⁸ Unity, “Maximize Multiplatform Game Development,” available at <https://unity.com/solutions/multiplatform>, accessed on May 1, 2024 (“Develop your game once and distribute it seamlessly across desktop, mobile, console, and VR, maintaining your creative vision intact.”).

²⁸⁹ Professor Rietveld discusses evidence that many video game publishers and users multihome across various platforms, including between PC and console platforms. See Rietveld Report, ¶ 73 (“[B]oth the Newzoo and ESA data indicate that some players use multiple device types (*i.e.*, multi-home) to play video games.”). Dr. Schwartz argues that publishers’ multihoming is evidence that the two platforms are complements to one another. See Schwartz Report, ¶ 68 (“However, rather than necessarily implying a substitutable relationship, multihoming can allow publishers to increase reach and capture different, *complimentary* [*sic*] groups of gamers.”). Dr. Schwartz does not justify this claim, and I note that multihoming may actually constitute evidence of substitution, not complementarity. Dr. Schwartz mentions that users may also multihome between third-party digital gaming and first-party digital gaming and physical gaming platforms. Dr. Schwartz does not explicitly justify his exclusion of first-party digital and physical gaming platforms on the basis that users multihome across these platforms. However, the fact that multihoming may be evidence of substitutability, rather than complementarity, can be true for these platforms as well.

²⁹⁰ Schwartz Report, ¶ 69 (“I conclude that physical distribution is not in the relevant market, because it is not an adequate substitute for digital third-party PC game distribution services.”).

²⁹¹ As discussed in Section 2.2, in 2009, 80 percent of games were sold on physical media, and by 2018, this proportion had flipped, with more than 80 percent of games being sold digitally.

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between buying and playing a game, among other procompetitive benefits.²⁹² Due in part to these benefits to publishers and consumers, the video gaming industry in general—and the PC and console gaming industry in particular—transitioned from mostly physical distribution to mostly digital distribution by 2018. The fact that physical sales of video games have been declining and are now small relative to their digital counterparts is an improper basis for excluding them from a proposed relevant market.²⁹³

131. Moreover, Dr. Schwartz fails to consider the fact that physical stores sell digital products. As discussed above in Section 2.1.1, brick-and-mortar stores sell digital products in addition to physical video games, such as Steam keys. By excluding physical stores from his proposed market, Dr. Schwartz improperly excludes these Steam key and other digital sales.
132. Finally, Dr. Schwartz’s rationale for excluding physical sales from his proposed relevant market is flawed. Dr. Schwartz claims that brick-and-mortar stores should be excluded from his proposed relevant market because users have a different shopping experience in physical stores compared to digital video game distribution platforms.²⁹⁴ However, this does not preclude the possibility that users could substitute between digital and physical purchases. Dr. Schwartz does not explain why the variance in shopping experiences is relevant to his choice to exclude physical stores from his proposed market definition.
133. In summary, physical video game retailers have historically represented a critical source of competition for digital third-party gaming platforms. This is consistent with academic literature that suggests that consumers do substitute between online and offline retail stores when prices change. Several studies find that when offline goods become relatively more expensive (e.g., due to changes in tax laws), consumers switch to buying retail goods online instead.²⁹⁵ This demonstrates how Dr. Schwartz’s exclusion of

²⁹² See Section 2.2.

²⁹³ If physical sales are part of the relevant market, Plaintiffs’ claims that Valve has had monopoly power since Steam’s launch is at odds with the fact that physical sales were a substantial source of competition for Steam at its launch. See Complaint, ¶¶ 50 (“Through [the] ‘forced adoption’ to play Half-Life 2, Valve started to build its ‘stranglehold on the PC gaming market ... Valve was able to strong-arm consumers into using Steam not on the merits of its platform, but as a necessary condition to play Valve’s then-marquee games.”), 51 (“Valve did what smaller publishers (Stardock) or non-publishers (GameStop and Direct2Drive) could not do—use a blockbuster hit and its control of a popular multiplayer service to force its gaming platform onto the market.”).

²⁹⁴ Schwartz Report, ¶ 69 (“Because the user experience in a digital shopping environment is so different from a physical environment, users are unlikely to regard digital shopping and brick-and-mortar stores as substitutes for game purchases.”).

²⁹⁵ Lesley Chiou and Erich Muehlegger, “Crossing the Line: Direct Estimation of Cross-Border Cigarette Sales and the Effect on Tax Revenues,” *B.E. Journal of Economic Analysis and Policy: Contributions to Economic Analysis and Policy*, 8(1), 2008 (“Higher income individuals are more likely to have Internet access and therefore buy online when they face higher offline prices.”); Austan Goolsbee, “In a World Without Borders: The Impact of Taxes on Internet Commerce,” *Quarterly Journal of Economics*, 115(2), 2000, pp. 561–576 at 561 (“The results suggest that, controlling for observable characteristics, people living in high sales taxes locations are significantly more likely to buy online.”); Austan Goolsbee, Michael F. Lovenheim, and Joel Slemrod, “Playing with Fire: Cigarettes, Taxes and Competition from the Internet,” *American Economic Journal: Economic Policy*, 2(1), 2010, pp. 131–154 at 152 (“this paper has presented evidence suggesting that the rise of the Internet and the associated increase in the ability of individuals to purchase tax-free cigarettes has significantly increased the tax sensitivity of consumers.”); Glenn Ellison and Sara Fisher Ellison, “Tax Sensitivity and Home State Preferences in Internet Purchasing,” *American Economic Journal: Economic Policy*, 1(2), 2009, pp. 53–71 at 53 (“We find a strong relationship between e-retail sales to a given state and sales tax rates that apply to purchases from offline retailers, suggesting substantial online-offline substitution and the importance of tax avoidance motives.”).

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physical sales is inconsistent with normal consumer substitution patterns. Dr. Schwartz fails to justify their exclusion from his proposed product market.

3.2. Dr. Schwartz’s calculation of Valve’s alleged market shares is overstated and does not constitute evidence of monopoly power

134. Dr. Schwartz computes alleged market shares for Valve under his flawed market definition and claims that Valve held between [REDACTED] and [REDACTED] percent market share from 2017 to 2021. Dr. Schwartz then argues that this provides evidence of Valve having monopoly power.²⁹⁶
135. In Section 3.2.1, I demonstrate that Dr. Schwartz’s proposed market size estimates fail to capture critical substitutes to Steam, which account for a large amount of consumer spending. As a result, Dr. Schwartz’s proposed market share for Valve is overstated. This is consistent with the fact that Dr. Schwartz’s proposed market size estimates are substantially lower than estimates of market share cited by Plaintiffs in the Complaint and from industry participants. Therefore, Dr. Schwartz’s market share calculations cannot constitute evidence that Valve possessed monopoly power. Then, in Section 3.2.2, I demonstrate that, even after setting aside Dr. Schwartz’s flawed market definition, his market share calculations are flawed and overstate Valve’s share of sales.
136. I note that an appropriate assessment of Valve’s market shares is not only important for assessing whether Valve has or has ever had monopoly power, but it is also an input into Dr. Schwartz’s damages model for measuring alleged harm in this matter.²⁹⁷ Since Dr. Schwartz overstates Valve’s share of sales, he also overstates antitrust damages, if any.

3.2.1. Dr. Schwartz’s calculation of Valve’s alleged market shares is overstated because it fails to account for substantial revenues from important alternatives to Steam

137. In this section, I calculate the total global revenue for alternatives to Steam that Dr. Schwartz improperly excludes from his proposed market definition starting in 2017 (the first year Dr. Schwartz estimates Valve’s alleged market share) through 2021 (the most recent year for which Dr. Schwartz estimates Valve’s alleged market share). I evaluate the effect of Dr. Schwartz’s failure to include this revenue in his calculations of Valve’s alleged market share and his assessment of whether Valve had monopoly power.
138. I rely on Newzoo (Appendix Section 16) to estimate the [REDACTED]. Newzoo is a leading market research firm that specializes in video games and gamer data.²⁹⁸ Newzoo has been relied upon in rulings made by courts in other matters, such as *Epic Games, Inc. v. Apple, Inc.*²⁹⁹ I note that Plaintiffs also rely on market research data from Newzoo in their Complaint, but Dr. Schwartz did not use the data in his calculation of Valve’s alleged

²⁹⁶ Schwartz Report, ¶ 132 (“The resulting market share calculation shows a Valve annual market share of between [REDACTED]% and [REDACTED]% from 2017 to 2021 and a weighted-average market share of [REDACTED]% over the five-year span.”).

²⁹⁷ Schwartz Report, Section 8. I understand that Professor Ashley Langer discusses Dr. Schwartz’s damages model in her report.

²⁹⁸ Newzoo, “About Newzoo,” available at <https://newzoo.com/about>, accessed on April 18, 2024.

²⁹⁹ Petition for a Writ of Certiorari, *Apple Inc. v. Epic Games, Inc.*, September 28, 2023, Footnote 437 (“The Court relies upon the reference [to a 2020 Newzoo report] because Newzoo is a credible third-party report that others in the industry rely upon.”).

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market share.³⁰⁰ Newzoo provides game-level data, gamer research, and games market forecasts.³⁰¹ In particular, Newzoo provides “Games Market Reports and Forecasts,” which contain estimates of all gaming revenues for PC, console, and mobile platforms since 2015.³⁰² These revenue estimates are reported in total and broken out across different types of platforms.³⁰³

139. I consider several estimates of total global revenue for digital PC game distribution and other important substitutes, all of which are substantially higher than Dr. Schwartz’s proposed market size estimates. The range of estimates underscores the fact that Dr. Schwartz’s proposed market size estimates fail to capture critical substitutes to Steam, which account for a large amount of consumer spending. The red columns in Exhibit 4 show Dr. Schwartz’s estimates of market size relative to my estimates of total global revenue for digital PC game distribution and other important substitutes. I consider the size of (a) digital PC distribution; (b) physical and digital PC distribution; and (c) physical, digital PC, and console distribution. For digital PC games (downloaded and browser) and console games, I include revenues from all digital sales, including in-game transactions, cloud gaming, and MGS.³⁰⁴ I note that, as described above in Section 3.1.1, to my knowledge, no industry participants or market research firms, [REDACTED], recognize first-party gaming as a separate market or submarket, and therefore do not delineate between first- and third-party revenue in their reported data. As a result, neither I nor anyone else could reliably engage in Dr. Schwartz’s exercise of excluding first-party sales from any of my estimations. Exhibit 4 shows estimates of total global revenue for digital PC game distribution and other important substitutes ranging from [REDACTED] in 2021, which are about [REDACTED] times larger than Dr. Schwartz’s proposed market size estimate of [REDACTED]

³⁰⁰ See, e.g., Complaint, ¶¶ 99 (“According to a market researcher”), 116 (“In the below market summary, the website NewZoo [REDACTED]”); Schwartz Report, ¶¶ 103 (“A 2023 report conducted by Newzoo includes survey responses from [REDACTED]”), 104 (“A 2023 Newzoo industry report shows [REDACTED]”); Rietveld Report, ¶¶ 27 (“Newzoo, a provider of video game industry data and analysis, estimated that there were approximately [REDACTED] video game players worldwide in 2023, with approximately [REDACTED] of those players residing in North America.”), 73 (“According to a 2022 Newzoo survey, [REDACTED] of the total online U.S. population are ‘game enthusiasts.’”).

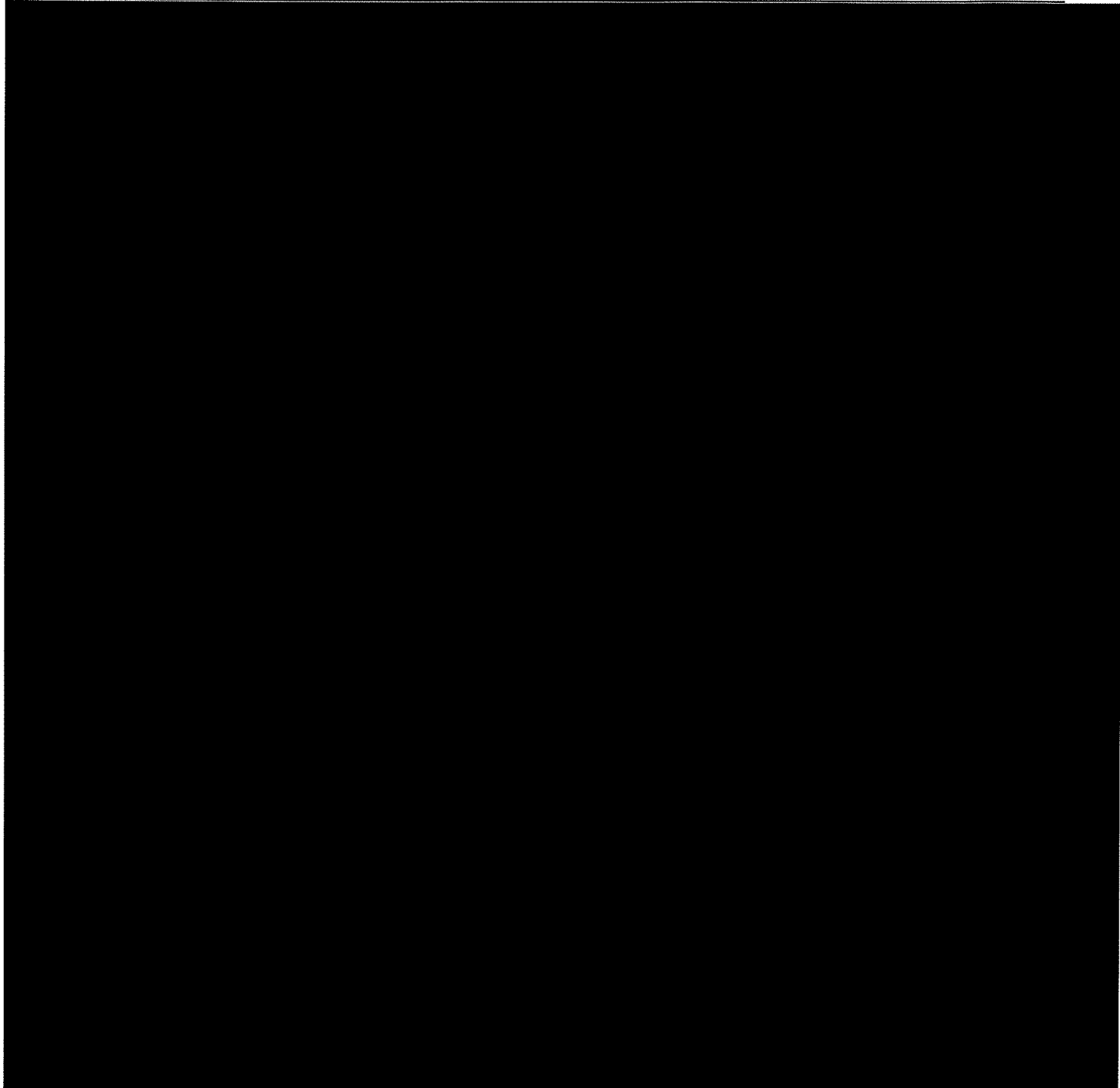
³⁰¹ Newzoo, “About Newzoo,” available at <https://newzoo.com/about>, accessed on April 18, 2024.

³⁰² Newzoo, “Games Market Reports and Forecasts,” available at <https://newzoo.com/games-market-reports-forecasts>, accessed on December 7, 2023.

³⁰³ Newzoo breaks out revenue data by platforms and ecosystems. Platforms include PC games, Mobile games, and Console games. Ecosystems include Epic Games Store, Steam, Apple App Store, Android App stores, Nintendo, PlayStation, and Xbox. See Newzoo, “Games Market Reports and Forecasts,” available at <https://newzoo.com/games-market-reports-forecasts>, accessed on December 7, 2023.

³⁰⁴ If I exclude revenues from cloud gaming or multi-game subscriptions, my results do not change materially. See Workpaper 15.

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140. Therefore, Dr. Schwartz’s market size estimates fail to account for a substantial portion of consumer spending attributable to important alternatives to Steam. As a result, Dr. Schwartz’s alleged market share calculations for Valve are overstated.
141. Dr. Schwartz’s overstated alleged market share calculations for Valve are inconsistent with the much larger market sizes that Plaintiffs allege in their Complaint and the market shares for Valve estimated by another industry participant. In their Complaint, Plaintiffs cite to 2020 data from Newzoo to show the size of the PC gaming market as \$36.9 billion, much higher than the market sizes Dr. Schwartz estimates in any year,

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which range from [REDACTED] billion.³⁰⁵ Similarly, the market share estimates filed by Microsoft in connection with its merger with Activision Blizzard report Valve’s market share to be between 10 and 20 percent across PC and console platforms in 2020 and 2021 and between 20 and 30 percent for PC games in 2020 and 2021, consistent with my conclusion that Dr. Schwartz overstates Valve’s alleged market share.³⁰⁶

142. Therefore, Dr. Schwartz’s improper exclusion of important alternatives to Steam causes him to overstate Valve’s alleged market share. Other estimates of Valve’s market share are consistent with this conclusion. As a result, the alleged market shares Dr. Schwartz calculates cannot constitute reliable evidence that Valve possesses monopoly power.

3.2.2. Dr. Schwartz’s calculation of Valve’s alleged market shares is inconsistent with his market definition and uses unreliable data

143. As discussed in Section 3.1 above, Dr. Schwartz improperly excludes important substitutes to Steam from his proposed relevant product market. I demonstrated in Section 3.2.1 that, as a result of his flawed product market definition, Dr. Schwartz overstates Valve’s alleged market share.
144. In this section, I assess Dr. Schwartz’s analysis of Valve’s alleged market shares, setting aside his flawed product market definition. I find that Dr. Schwartz’s calculation of alleged market shares is also flawed and overstates Valve’s share of sales.
145. First, Dr. Schwartz’s proposed market share calculations improperly exclude revenues related to his proposed market definition from his estimates of market size. Dr. Schwartz’s market size calculation includes revenues only from the following platforms: Steam, EGS, Humble Bundle, GOG Galaxy, Ubisoft Connect, Green Man Gaming, GamersGate, the Microsoft Store, and online distribution through Target and Best Buy, improperly excluding some third-party platforms, such as Tencent, which operates the third-party video game distribution platform WeGame.³⁰⁷ Tencent’s PC gaming revenues in 2022 exceeded \$6 billion.³⁰⁸ Although Tencent earns revenues outside of PC game distribution on WeGame, it is the largest firm in the industry, as explained in

³⁰⁵ Complaint, ¶ 116; Schwartz Report, Attachment E-1.

³⁰⁶ Conselho Administrativo De Defesa Econômica, “E-mail Microsoft / Activision (Resp. Of. 4121/2022) [Document 1079485],” June 22, 2022, pp. 12, 13, Table 8, Table 9, available at https://sei.cade.gov.br/sei/modulos/pesquisa/md_pesq_processo_exibir.php?iMQnTNkPQ_sX_bghfgNtnzTLgP9Ehbk5UOJvmyzesnbE-Rf6Pd6hBcedDS_xdwMQMK6_PgwPd2GFLljHoOLyFX6gl2sGKAL6BCs1NvfGDcTA25PStaVelgicwm5iRue6, accessed on April 18, 2024 (“Table 8. Digital Distribution of PC and Console Games – Global – 2020 and 2021 ... Table 9. Digital Distribution of PC Games – Global – 2020 and 2021.”).

³⁰⁷ Schwartz Report, Footnote 383 (“I consider revenues from the following third-party PC game distribution platforms that fit into the relevant market: Steam; Epic Games Store; GOG Galaxy, Ubisoft Connect (f/k/a Uplay); and the Microsoft Store. I also consider revenues from digital third-party distribution of PC games that occur outside of a gameplay platform, including the following: Humble Bundle, Green Man Gaming, and GamersGate, as well as online distribution through retail stores such as Best Buy and Target.”); Ian Boudreau, “Tencent has launched the global version of WeGame,” *PCGamesN*, April 7, 2019, available at <https://www.pcgamesn.com/tencent-launches-wegame-x>, accessed on December 7, 2023 (“Chinese games giant Tencent’s Steam and Epic Games Store competitor is now live internationally.”).

³⁰⁸ Tencent’s 2022 Annual Report records the PC client games revenue to be 47 billion RMB. Using a conversion rate of 6.9631 RMB/USD on December 30, 2022, I calculate the revenue in USD to be \$7 billion. See Tencent Holdings Limited, “2022 Annual Report,” undated, available at <https://static.www.tencent.com/uploads/2023/04/06/214dce4c5312264800b20cfab64861ba.pdf>, accessed on May 9, 2024, p. 10; Yahoo Finance, “USD/CNY (CNY=X),” available at <https://finance.yahoo.com/quote/CNY=X/history/?period1=1669852800&period2=1672531200>, accessed on May 9, 2024 (“Dec 30, 2022 ... Close ... 6.9631”).

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Section 2.3. Dr. Schwartz provides no basis for excluding Tencent and WeGame. Similarly, Dr. Schwartz excludes Discord, itch.io, and EA, all of which are, or were during the proposed class period, third-party platforms.³⁰⁹ Dr. Schwartz claims that he does this because he lacks data, and speculates that their third-party sales are “de minimis.”³¹⁰ Regardless of the size of their revenues, these firms are included in Dr. Schwartz’s proposed market definition, and his market size fails to account for them.

146. Second, Dr. Schwartz’s proposed market share calculations improperly include revenues unrelated to his market definition in his estimates of Steam’s revenues. Dr. Schwartz claims that his estimates of Steam’s revenues represent “Steam’s transaction value associated with only sales of third-party developer-generated content.”³¹¹ However, Dr. Schwartz’s estimates of Steam revenues improperly include revenues that he acknowledges are unrelated to third-party distribution. Dr. Schwartz acknowledges that the revenues he relies on include “Cyber Café,” “Steam Direct Fees,” and “Trading Fees,” which are not related to the sale of third-party games or in-game purchases. Notwithstanding that acknowledgment and the fact that these fees may not amount to a substantial amount of revenue,³¹² Dr. Schwartz does not attempt to remove these revenues from his estimates of Steam’s revenues and market share, artificially inflating both.
147. Finally, Dr. Schwartz uses a variety of different, and potentially noncomparable or unreliable, data sources to estimate his proposed market shares. Instead of Newzoo’s data, which Plaintiffs’ Complaint cites, and which I rely on for my estimates of consumer spending on video games, Dr. Schwartz relies on a variety of different sources that are not comparable to estimate market size. In particular, Dr. Schwartz relies on financial profit and loss statements for revenues for EGS as well as for Valve;³¹³ consolidated financial statements for GOG; sales data for Humble Bundle, Target, Best Buy, and Microsoft; and an EGS board of directors presentation for Ubisoft, Green Man Gaming, and GamersGate.³¹⁴ Additionally, the revenue estimates from the EGS board of directors presentation in particular are unreliable, since its revenue estimates contradict the

³⁰⁹ As discussed in Section 2.3, EA does not currently distribute third-party games, but has historically done so. EA launched Origin as a first-party platform in 2011 and then a few months later began to distribute third-party games. EA later discontinued the distribution of third-party games and is now a first-party platform once again.

³¹⁰ Schwartz Report, Footnote 383 (“While I have considered revenues for EA App (f/k/a Origin), Itch.io, and the Discord Store, I have not found sufficient evidence available in production nor in any publicly produce documents or financials to attempt a calculation of third-party platform revenues over the relevant time period. For reasons described below, I understand that these three stores had *de minimis* third-party revenues and including them in my market share analysis would not materially impact Steam’s share of the relevant market.”); Schwartz Deposition, pp. 134–135 (“Q. Would it be fair to say that you excluded the data on EA’s sales of third-party games on its platform because you didn’t have enough data to know what to put in? A. Didn’t have any data, so far as I’m aware. Q. And is the same true for Itch.io and Discord which also appear on your list but you don’t have any numbers for them? A. Correct, and that’s also discussed in the same section.”).

³¹¹ Schwartz Report, ¶ 143.

³¹² Schwartz Report, Footnote 392 (“Although revenues associated with publishing fees and the Cyber Café program are unaffiliated with third-party content revenues, [REDACTED]”).

³¹³ I note that Dr. Schwartz provides no justification for relying on the less granular financial statements as opposed to the more granular transaction data that I use in my analyses for his estimates.

³¹⁴ Schwartz Report, Attachment E-1.

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revenues reported in the GOG financial statements.³¹⁵ Relying on noncomparable, unreliable, and incomplete data sources results in flawed estimates of market shares.

³¹⁵ [REDACTED] Meanwhile, in Attachment E-6, Dr. Schwartz relies on the company’s public reporting to calculate 2018 and 2019 GOG revenues at \$40 million and \$42 million. Dr. Schwartz does not comment on the contradiction of these two sources, [REDACTED], nor what this implies about the reliability of the revenue estimates from the presentation for Ubisoft, Green Man Gaming, and GamersGate.

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4. PLAINTIFFS CANNOT ESTABLISH COMMON IMPACT OF THE CHALLENGED CONDUCT THROUGH ALLEGED SUPRACOMPETITIVE REVENUE SHARES

148. Plaintiffs and Dr. Schwartz allege that Valve has a dominant position in the market that enables it to charge all proposed class members a supracompetitive revenue share on Steam. Dr. Schwartz further claims that “all, or virtually all, class members were injured provided that an economic analysis shows Valve’s commission rates would decrease in a world free of Valve’s PMFN policy.”³¹⁶ In this section, I show that Valve’s revenue share rate is consistent with competition. I also show that Dr. Schwartz’s calculation of Valve’s *effective* revenue share is flawed because it ignores a critical source of Steam-based revenues for many publishers: sales of Steam keys.³¹⁷ As a result, Dr. Schwartz’s analysis concluding that Valve charges an alleged supracompetitive revenue share is unreliable and incapable of showing antitrust impact on a class-wide basis. Furthermore, I show that evaluating antitrust impact would require individualized inquiry that Plaintiffs cannot conduct on a class-wide basis because essential data on each publisher’s sales of Steam keys are not available class-wide. Attempts to approximate a publisher’s sales of Steam keys with limited available data lead to widely varied estimates of revenue share rates. The estimates of a publisher’s revenue share may fall above or below Dr. Schwartz’s alleged competitive thresholds, and therefore show antitrust impact or not, depending upon the approximation method used.

149. To establish class-wide antitrust impact, Plaintiffs and Dr. Schwartz must first show that Valve’s revenue share rate is supracompetitive. To the contrary, in Section 4.1, I show that Valve’s revenue share rates are, in fact, consistent with competition. As discussed in Section 3.1 above, Valve’s nominal revenue share rate (i.e., the rate received for sales on Steam) decreased in 2018 in response to competition, from 30 percent for nearly all sales to 30 percent, 25 percent, or 20 percent depending upon a game’s sales. In this section, I show that these rates are comparable to and competitive with rates offered by Valve’s competitors. Furthermore, I explain that a correct measure of a publisher’s revenue share must account for Steam key sales. A publisher’s *effective* revenue share (i.e., the rate received for all Steam-related sales) is lower after considering Steam key sales; the more a publisher relies on Steam key sales (compared to sales on Steam), the lower its effective revenue share. Neither Dr. Schwartz nor I have data on publishers’ actual sales of Steam keys on other platforms (neither prices, quantities, nor dates sold). Therefore, I examine publishers’ effective revenue share rates under different approximations that use different assumptions about the quantities and prices of Steam keys sold. I show that the effective revenue share for a given publisher (as well as publishers’ average effective revenue share) varies with the assumptions made. As described in Section 2.2 above, Steam keys provide an additional source of Steam-related revenues to publishers for which Valve does not receive a revenue share. Any analysis of a publisher’s revenue share for games launched from Steam must account for

³¹⁶ Schwartz Report, ¶ 242.

³¹⁷ See definitions of different types of revenue shares in Section 2.1.1 above. Note that I use terms like “Valve’s revenue share” or “publisher’s revenue share” on Steam to refer to the share received by Valve. Whenever I refer to the portion retained by the publisher, I explicitly specify it.

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Steam keys; otherwise, the analysis is unreliable and incapable of showing class-wide impact.

150. Next, in Section 4.2, I analyze whether it is possible to establish, on a class-wide basis, that Valve’s allegedly supracompetitive revenue share injured the proposed class members. My analysis of the available data demonstrates that common evidence is not available to show class-wide impact. First, I explain that publishers vary in their effective revenue shares due to their use of Steam keys. Because publishers pay nothing to Valve for Steam keys—nothing to acquire them and no revenue share to Valve when they sell them—the *effective* revenue share that Valve receives from publishers varies widely. However, Dr. Schwartz’s class-wide assessment incorrectly *assumes that all publishers face a common revenue share structure on Steam*, because he ignores the role of Steam keys in the revenue share Valve receives from each publisher.
151. Instead, a correct assessment of alleged injury to each publisher requires data on publishers’ sales of Steam keys. Publishers do not share that information with Valve. I show that approximations with the limited available data demonstrate wide variation in effective revenue shares among publishers, and that different approximations can lead to different conclusions about the effective revenue shares of many publishers (Section 4.2.1). I also describe the individualized factors that may affect Steam key pricing and sales and demonstrate that any approximation that assumes uniform Steam key pricing strategies across publishers understates the true extent of differences in Steam key sales among publishers (Section 4.2.2).
152. Then, in Section 4.3, I explain that Plaintiffs and Dr. Schwartz do not, and cannot, use the available data to conduct reliable analyses to identify which of the proposed class members were impacted by Valve’s alleged conduct. Using available data to approximate Steam key sales requires making assumptions about the quantities and prices of Steam keys each publisher sold. Approximations based on different assumptions lead to different conclusions about which publishers are injured due to Valve’s alleged conduct. Therefore, individualized inquiry is necessary to determine each publisher’s sales of Steam keys, and therefore whether each publisher is injured.
153. Finally, in Section 4.4, I explain that Plaintiffs and Dr. Schwartz fail to consider potential changes to Valve’s issuance, and publishers’ use, of Steam keys in the but-for world. Dr. Schwartz *assumes, without justification*, that Valve’s Steam key practices and publishers’ reliance on Steam keys would remain the same in the but-for world.³¹⁸ Existing evidence and Dr. Schwartz’s deposition testimony both contradict his assumptions. I find historical evidence that Valve changed its business decisions over Steam keys together with other policy changes, and that these changes affected publishers differently. I also find that publishers would likely adjust their use of Steam keys after changes in Valve’s policies, such as changes to revenue share rates in Dr. Schwartz’s but-for world, and that those adjustments differ across publishers. The effect

³¹⁸ Schwartz Report, Footnote 827 (“[T]here are instances in which users gain access to a game played through Steam through the acquisition of a Steam Key rather than the purchase of the game directly on Steam. In such instances, those purchases are not subject to the Valve commission charge. In the but-for world, I assume that Steam Keys would have been provided and used in the same manner as in the real world and focus my determination of the but-for price solely on those purchases made through Steam and thus subject to the Valve commission charge.”).

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of those adjustments on a publisher’s effective revenue share in the but-for world also requires individualized inquiry. Therefore, Dr. Schwartz does not—and cannot—provide a method that can establish class-wide antitrust impact with common evidence.

4.1. Valve’s revenue share is consistent with competition, and Dr. Schwartz’s analysis is flawed because it does not account for the effect of Steam key sales on revenue share

154. Plaintiffs and Dr. Schwartz allege that Valve uses a dominant position in the proposed market to charge all proposed class members a supracompetitive revenue share. However, these allegations are at odds with the facts. In Section 3.1 above, I discussed how Valve lowered its nominal revenue share rate in response to competition in 2018. In this section, I demonstrate that these lowered rates are comparable to and competitive with rates offered by Valve’s competitors. Further, I discuss how Plaintiffs and Dr. Schwartz overstate publishers’ revenue shares by omitting revenues from the sale of Steam keys, for which publishers pay no revenue share to Valve. Dr. Schwartz’s decision to disregard Steam keys renders his analyses of revenue shares unreliable.
155. Valve’s nominal revenue share rate is competitive with and sometimes lower compared to other popular game distribution platforms. In Appendix Section 11, I summarize the nominal revenue share rates (i.e., the rates charged to publishers for game sales on platforms) of competing platforms. I compare the minimum of a publisher’s revenue share rates on competing platforms to the revenue-weighted average of Valve’s nominal revenue share rate following the introduction of Valve’s tiered revenue share rates. As calculated by Dr. Schwartz, Valve’s nominal revenue share rate of █████ percent is comparable to the rates of other platforms during this period.³¹⁹ Notably, Valve’s average nominal revenue share rate has been decreasing each year over this period, reaching as low as █████ percent in 2022.³²⁰
156. However, these rates do not account for the effect of Steam key sales on publishers’ revenue shares. As explained in Section 2.2 above, Valve offers Steam keys—digital codes that users redeem for games on Steam—to publishers for free. Therefore, Steam keys lower a publisher’s effective revenue share rate because publishers pay no revenue share for games sold elsewhere through Steam keys. However, Valve provides the same service through the Steam platform—and incurs the same distribution costs—whether games are redeemed through keys or purchased on Steam.³²¹ Therefore, it is vital to account for Steam keys when analyzing revenue share rates charged to a publisher or

³¹⁹ Schwartz Report, ¶ 308.

³²⁰ Workpaper 16.

³²¹ Costs to Valve associated with Steam keys include more than “the costs associated with running a content delivery network,” as Plaintiffs suggest, because games redeemed from Steam keys have all of the same functionality and interoperability with Steam features as the same game purchased from the Steam storefront directly. See Complaint, ¶ 224 (“While Valve claimed this was because it was bearing the cost of allowing Steam keys to be sold on third-party stores, the costs associated with running a content delivery network in 2017—the year that Valve changed the policy—were reportedly approximately 0.2 cents (\$0.002) per gigabyte.”); Kyle Orland, “Why Valve actually gets less than 30 percent of Steam game sales,” *Ars Technica*, April 4, 2019, available at <https://arstechnica.com/gaming/2019/04/why-valve-actually-gets-less-than-30-percent-of-steam-game-sales/>, accessed on April 18, 2024 (“Remember also that Valve incurs plenty of costs for these Steam key sales. Beyond the mere bandwidth costs for game and update downloads, key-based sales can still access the same online lobbies, achievement and leaderboard systems, Steam Workshop inventory management, Steam server APIs, anti-cheat services, and everything else that comes with being on Steam.”).

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when comparing Valve’s revenue share to the revenue share rates of competing platforms presented in Appendix Section 11.³²²

157. To better understand why, it is useful to consider a simple equation that defines Valve’s effective revenue share rate for a publisher (“Publisher’s effective revenue share rate”). Valve’s effective revenue share rate for a publisher is the revenue Valve receives from the publisher’s sales on Steam (“Valve’s portion of publisher’s Steam revenues”) as a share of all revenues that the publisher earns from games on Steam (“Publisher’s revenue from sales on Steam + Publisher’s revenue from Steam key sales”):

$$\text{Publisher's effective revenue share rate} = \frac{\text{Valve's portion of publisher's Steam revenues}}{\text{Publisher's total revenue from Steam-related sales}} =$$

$$= \frac{\text{Valve's portion of publisher's Steam revenues}}{\text{Publisher's revenue from sales on Steam} + \text{Publisher's revenue from Steam key sales}}$$

158. Omitting a publisher’s revenue from Steam key sales will overstate that publisher’s revenue share rate. To the extent that publishers vary in their usage of Steam keys, their effective revenue shares will vary as well, and omitting their revenues from Steam key sales will understate the differences in revenue share from publisher to publisher (Steam key sales are the second term in the denominator of the equation above. Without this second term, the denominator becomes smaller, and the fraction or revenue share rate increases). Despite admitting that “[Steam key] purchases are not subject to the Valve commission charge,” Dr. Schwartz fails to account for Steam keys in his analysis of publishers’ effective revenue shares.³²³ Therefore, Dr. Schwartz’s calculation of each

³²² Steam keys are far more prevalent than keys from competing platforms on storefronts that resell keys. While Dr. Schwartz notes that keys from other software platforms are sold on storefronts, he offers no quantification of the number of keys distributed by those platforms. Plaintiffs acknowledge that key resellers are “typically selling Steam keys.” See Schwartz Report, Footnote 615 (“some third-party digital PC game distribution platforms, especially the non-gaming platforms, are reliant on Steam Keys and other keys ... For example ... Instead of purchasing and playing the game directly through Humble, users purchase keys to games on the Humble Store that need to be redeemed on a gaming platform such as Steam, Ubisoft Connect, or GOG.”); Complaint, ¶ 67 (“Competitors that attempt to compete with Steam in the PC game distribution market ... are typically selling Steam keys.”). A simple examination of the number of games available through Steam keys relative to games available through keys from other platforms supports this claim. For example, as of April 26, 2024 approximately 12,500 games listed for sale on the Humble Store are available as Steam keys, while only 163 and 41 are available as EGS and GOG keys. See Humble Bundle, “Games on Steam,” available at <https://www.humblebundle.com/store/c/steam>, accessed on April 26, 2024; Humble Bundle, “Games on EGS,” available at <https://www.humblebundle.com/store/c/all?sort=bestselling&page=1&drm=epic>, accessed on April 26, 2024; Humble Bundle, “Games on GOG,” available at <https://www.humblebundle.com/store/c/all?sort=bestselling&page=1&drm=gog>, accessed on April 26, 2024. An examination of games listed for sale on Green Man Gaming yields similar results, with more than 7,800 games available as Steam keys, and only 59 games available as EGS keys. See Green Man Gaming, “All Games,” available at <https://www.greenmangaming.com/all-games/>, accessed on April 26, 2024. [REDACTED]

[REDACTED] Similarly, testimony from Humble witness Jeffrey Rosen given in this matter indicates that, of all distributed keys on Humble during his time with the company, approximately 95 percent of distributed keys were Steam keys. See Deposition of Jeffrey Rosen (Wolfire), November 17, 2023, p. 224 (“Q. ... Aside from Steam keys, are you able to say or estimate the percentage of keys from other game platforms that were represented in Humble’s game sales? A. As in how -- what percentage of our key stocks were from Valve versus other companies? Q. Distributed keys, yeah. A. I would guess five percent others. Q. And -- okay. And is that for keys distributed or held in stock? A. Keys distributed.”).

³²³ Schwartz Report, Footnote 827, ¶¶ 308 (“In fact, Steam’s effective commission rate across all developers from November 30, 2018 through December 31, 2022 was still [REDACTED] % according to Valve’s transaction data[.]”), 352 (“From January 28, 2017 through December 31, 2022, Steam generated an effective commission rate of [REDACTED] %, a rate that includes periods before and after the implementation of the tiered commission rate.”). Dr. Schwartz’s revenue share calculations only make use of Steam revenue and payments data but do not incorporate Steam keys. See Schwartz Report, backup materials.

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publisher’s revenue share, and consequently Valve’s average effective revenue share, is incorrect and ignores important distinctions from publisher to publisher.³²⁴

159. The effective revenue share rate is the appropriate measure of revenue share to consider for the assessment of antitrust impact in this case because it fully captures publishers’ Steam-related sales. But **neither Dr. Schwartz nor I can calculate effective revenue shares because data on publishers’ revenue from Steam key sales are not available in this matter.** In Section 4.2, I explain that calculating publishers’ effective revenue shares would require individualized inquiry into each publisher’s sales of Steam keys. Here, I show that although Steam key sales can be approximated using available data, different assumptions about the quantities and prices of Steam keys sold lead to different approximations of Steam key sales. These different approximations then lead to differing estimates of publishers’ effective revenue shares (and in Section 4.3, I show how these different approximations also lead to different conclusions on which publishers are impacted by Valve’s alleged conduct). However, each approximation indicates an average effective revenue share that is near or below 20 percent, a significant departure from the █████ percent claimed by Dr. Schwartz over the proposed class period.³²⁵
160. I consider several approximations of publishers’ effective revenue shares based on different sets of assumptions about publishers’ sales of Steam keys. The approximation of Steam key sales for a given publisher requires assumptions about (a) how many Steam keys the publisher sold and when, and (b) the price at which those keys were sold.³²⁶
161. One way to approximate the quantities and timing of Steam keys sold is to assume that the number of Steam keys sold is (a) equal to the number of Steam keys redeemed by users, or (b) equal to the number of Steam keys issued to publishers.³²⁷ Then, I can use the data produced by Valve on Steam key redemptions or issuances to approximate the quantities and timing of keys sold.
162. To approximate the prices at which Steam keys were sold, I consider two assumptions. First, I can assume that keys were sold at prices equal to the transacted Steam prices of the corresponding games. Second, I can assume that Steam keys were sold at some discount to the transacted Steam prices for the corresponding games—I adopt a 20 percent discount for illustration in my following analyses.³²⁸

³²⁴ What Dr. Schwartz calls “effective” revenue share is in fact Valve’s average nominal revenue share rate.

³²⁵ Schwartz Report, ¶ 352 (“From January 28, 2017 through December 31, 2022, Steam generated an effective commission rate of █████%.”).

³²⁶ I discuss the details of these approximations in Appendix Section 12.

³²⁷ Dr. Schwartz claims that sales of Steam keys occurring on first-party stores are not a part of the relevant market. Schwartz Deposition, p. 81 (“Q. ... [W]ould the sales of the Steam keys for that game on the publisher’s own website be part of your relevant market? A. ... If it’s just a website, no, I don’t believe it would.”). However, as discussed in Section 3.1 above, Dr. Schwartz’s exclusion of first-party sales is improper. I examine the revenues received by Valve as a proportion of each publisher’s Steam-related sales. Therefore, my results are not contingent on key sales occurring on third-party stores included in Dr. Schwartz’s proposed market.

³²⁸ As shown in Section 7.1 below, Steam keys for a game are often sold for lower prices on Steam key resellers than the price on Steam. Note I adopt a 20 percent discount for illustration purposes only. As discussed in Section 4.2, determining the prices at which Steam keys are sold by each publisher, and how they are priced relative to the games’ Steam prices, requires individualized inquiry into how each publisher prices Steam keys.

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163. Given these assumptions, I examine four different methods of approximation for the sales of Steam keys:
- a. **“Approximation 1”** assumes the number of Steam keys sold to be equal to the number of Steam keys redeemed, and the price at which those keys were sold to be equal to the games’ transacted Steam prices.
 - b. **“Approximation 2”** assumes the number of Steam keys sold to be equal to the number of Steam keys redeemed, and the price at which those keys were sold to be equal to a 20 percent discount on the games’ transacted Steam prices.
 - c. **“Approximation 3”** assumes the number of Steam keys sold to be equal to the number of Steam keys issued, and the price at which those keys were sold to be equal to the games’ transacted Steam prices.
 - d. **“Approximation 4”** assumes the number of Steam keys sold to be equal to the number of Steam keys issued, and the price at which those keys were sold to be equal to a 20 percent discount on the games’ transacted Steam prices.
164. Exhibit 5 demonstrates how these different assumptions about Steam key sales (which are necessary to correct Dr. Schwartz’s decision to disregard the revenue that publishers earn from Steam keys) can lead to different approximations of publishers’ effective revenue share rates during the proposed class period. The exhibit also shows how, for each approximation, publishers’ rates are lower than Dr. Schwartz’s calculated average effective revenue share of [REDACTED] percent. For some publishers who rely more heavily on Steam keys, such as [REDACTED], different assumptions can yield widely varying approximations of effective revenue share, ranging from a minimum of approximately 9 percent to a maximum of more than 22 percent. Approximated revenue shares can vary less widely for publishers who do not rely heavily on Steam keys, such as [REDACTED]
165. Additionally, Exhibit 5 demonstrates that publishers’ approximated effective revenue shares during the proposed class period are not uniformly higher or lower depending on the assumptions made about the quantity of Steam keys sold. For [REDACTED], and Wolfire, approximated effective revenue shares are higher when assuming that the quantity of keys sold is equal to the quantity of keys redeemed (Approximations 1 and 2) than when assuming the quantity to be equal to keys issued (Approximations 3 and 4). In contrast, [REDACTED] demonstrates the reverse pattern—more keys were redeemed for [REDACTED] games during the proposed class period than were issued during the proposed class period, resulting in effective revenue shares under Approximations 1 and 2 that are lower than under Approximations 3 and 4.³²⁹
166. Because of this variation in effective revenue shares for each publisher, Valve’s average effective revenue share rate during the proposed class period also varies depending on how sales of Steam keys are approximated, ranging from a minimum of 16 percent to a maximum of 22 percent based on the approximation used.³³⁰ Once I account for Steam keys, my approximations of Valve’s effective revenue share are all lower than the rates

³²⁹ This pattern can occur where publishers are issued a significant number of keys prior to the proposed class period and those keys are then redeemed during the proposed class period.

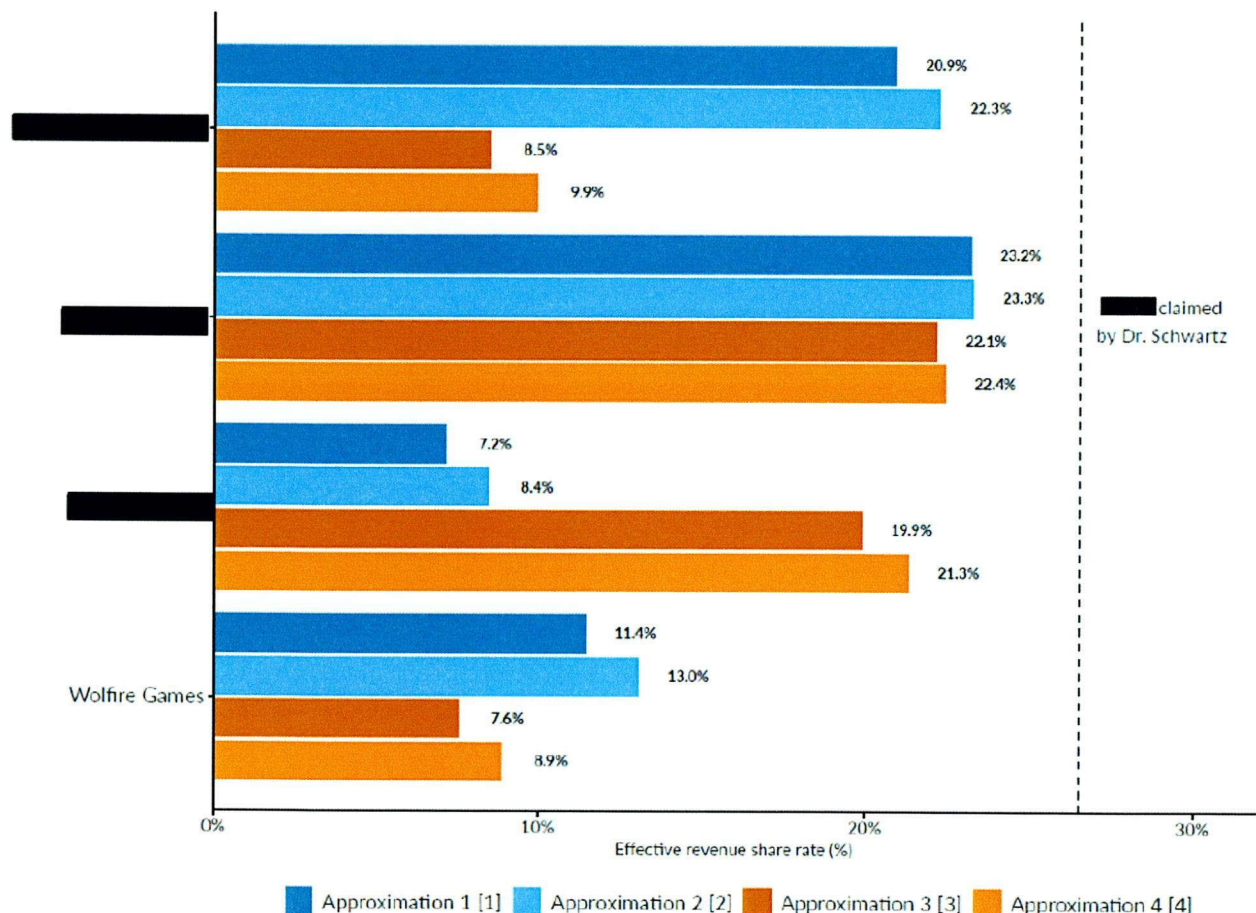
³³⁰ Workpaper 17.

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charged by many competitors.³³¹ These facts sharply undercut Plaintiffs' and Dr. Schwartz's allegations that Valve charges supracompetitive revenue share rates to publishers. Instead, the facts are evidence of Valve competing on revenue share in the industry.

Exhibit 5

Different assumptions about Steam key sales lead to different approximations of publishers' effective revenue shares, January 28, 2017–December 31, 2022



Source: Schwartz Report, backup materials; Steam Key Redemptions Data; Steam Key Requests Data

Note:

[1] "Approximation 1" assumes the number of Steam keys sold to be equal to the number of Steam keys redeemed, and the price at which those keys were sold to be equal to the games' Steam prices.

[2] "Approximation 2" assumes the number of Steam keys sold to be equal to the number of Steam keys redeemed, and the price at which those keys were sold to be equal to a 20 percent discount to the games' Steam prices.

[3] "Approximation 3" assumes the number of Steam keys sold to be equal to the number of Steam keys issued, and the price at which those keys were sold to be equal to the games' Steam prices.

[4] "Approximation 4" assumes the number of Steam keys sold to be equal to the number of Steam keys issued, and the price at which those keys were sold to be equal to a 20 percent discount to the games' Steam prices.

³³¹ As explained above, existing evidence suggests that Steam keys are far more commonly sold by key resellers than keys from other platforms, and the proportion of Steam users redeeming keys on the platform is significantly greater than the proportion of EGS users redeeming EGS keys. As such, while I do not have data regarding the sales of keys from competing platforms, I expect my results would be substantively the same if I were able to include sales of keys from other platforms in the revenue shares presented in Appendix Section 11.

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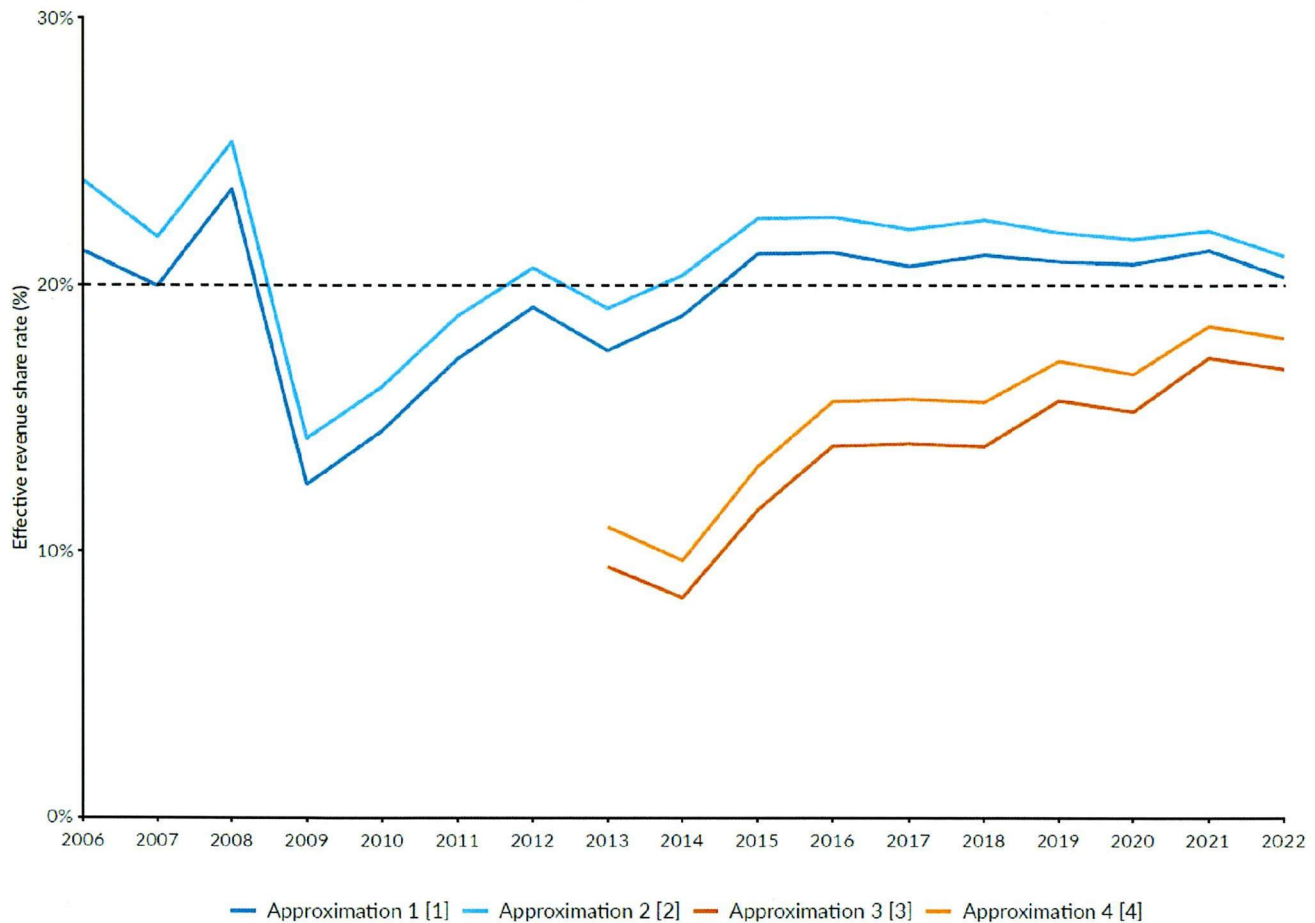
167. Exhibit 6 depicts changes in Valve’s effective revenue share rate over time, including each approximation presented above. These approximations are all either roughly at or below 20 percent since 2008, consistent with the range of rates that Dr. Schwartz claims to be competitive rates but for Valve’s alleged conduct.³³² Moreover, depending on the assumptions made to approximate Steam key sales, Valve’s effective revenue share may have decreased since Steam started selling games by other publishers in 2005.³³³ These actual-world revenue share rates contradict Plaintiffs’ allegation that Valve charges “a 30% commission on nearly every sale made through its store.”³³⁴
168. To reiterate, it is necessary to make assumptions about the quantities and prices of Steam keys sold to approximate each publisher’s effective revenue share in the actual world due to the lack of publisher-level data on Steam key sales. The variation in results under each approximation demonstrates that establishing antitrust impact to proposed class members requires individualized inquiry. I discuss the need for individualized inquiry further in the next section.

³³² Schwartz Report, ¶ 313 (“The Platform Competition Model approach, yardstick approach, and empirical approach conducted above suggest a but-for take rate of between 12% and 20%.”).

³³³ This is consistent with Plaintiffs’ characterization of a market where Valve responds to increased competition over time. See Complaint, ¶ 8 (“in a competitive market, after this first-mover period, the entry of other rivals with an electronic distribution model like the Steam Store would have quickly forced Valve’s commission levels down to competitive levels by competing on price (i.e., by charging lower commissions)”).

³³⁴ Complaint, ¶ 4 (“Valve uses its dominance over PC game distribution to impose and anticompetitively maintain a 30% commission on nearly every sale made through its store”). I offer further discussion in Section 4.3 below of publishers with revenue share rates within and below the 12 to 20 percent “competitive” range Dr. Schwartz claims.

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Exhibit 6**Approximations of Valve's average effective revenue share rate over time**

Source: Schwartz Report, backup materials; Steam Key Redemptions Data; Steam Key Requests Data

Note:

[1] "Approximation 1" assumes the number of Steam keys sold to be equal to the number of Steam keys redeemed, and the price at which those keys were sold to be equal to their Steam prices. The first redemptions of Steam keys for non-Valve titles occurred in 2006.

[2] "Approximation 2" assumes the number of Steam keys sold to be equal to the number of Steam keys redeemed, and the price at which those keys were sold to be equal to a 20 percent discount on their Steam prices.

[3] "Approximation 3" assumes the number of Steam keys sold to be equal to the number of Steam keys issued, and the price at which those keys were sold to be equal to their Steam prices. The first full year of data availability on Steam key issuances is 2013.

[4] "Approximation 4" assumes the number of Steam keys sold to be equal to the number of Steam keys issued, and the price at which those keys were sold to be equal to a 20 percent discount on their Steam prices.

4.2. Calculating accurate effective revenue shares requires individualized data not produced in this matter

169. Dr. Schwartz assumes that "Given Valve's imposition of a standard pricing structure for publishers ... the default commission rate would fall and that would benefit each publisher," and that "Each publisher would only pay the new, lower, default commission

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rate,” in the but-for world.³³⁵ Dr. Schwartz’s assumption fails to consider that each publisher’s revenue share varies with its use of Steam keys.

170. In this section, I focus on two of the effective revenue share approximations presented above to demonstrate that, contrary to Dr. Schwartz’s assumption, the pricing structure each publisher faces varies, and that different assumptions about the sales of Steam keys lead to different conclusions about the pricing structure faced by each publisher. Then, I discuss how no approximation with the available data can account for other important differences in how publishers set prices for Steam keys. My results demonstrate that individualized inquiry is needed to determine effective revenue share and antitrust impact for each publisher.

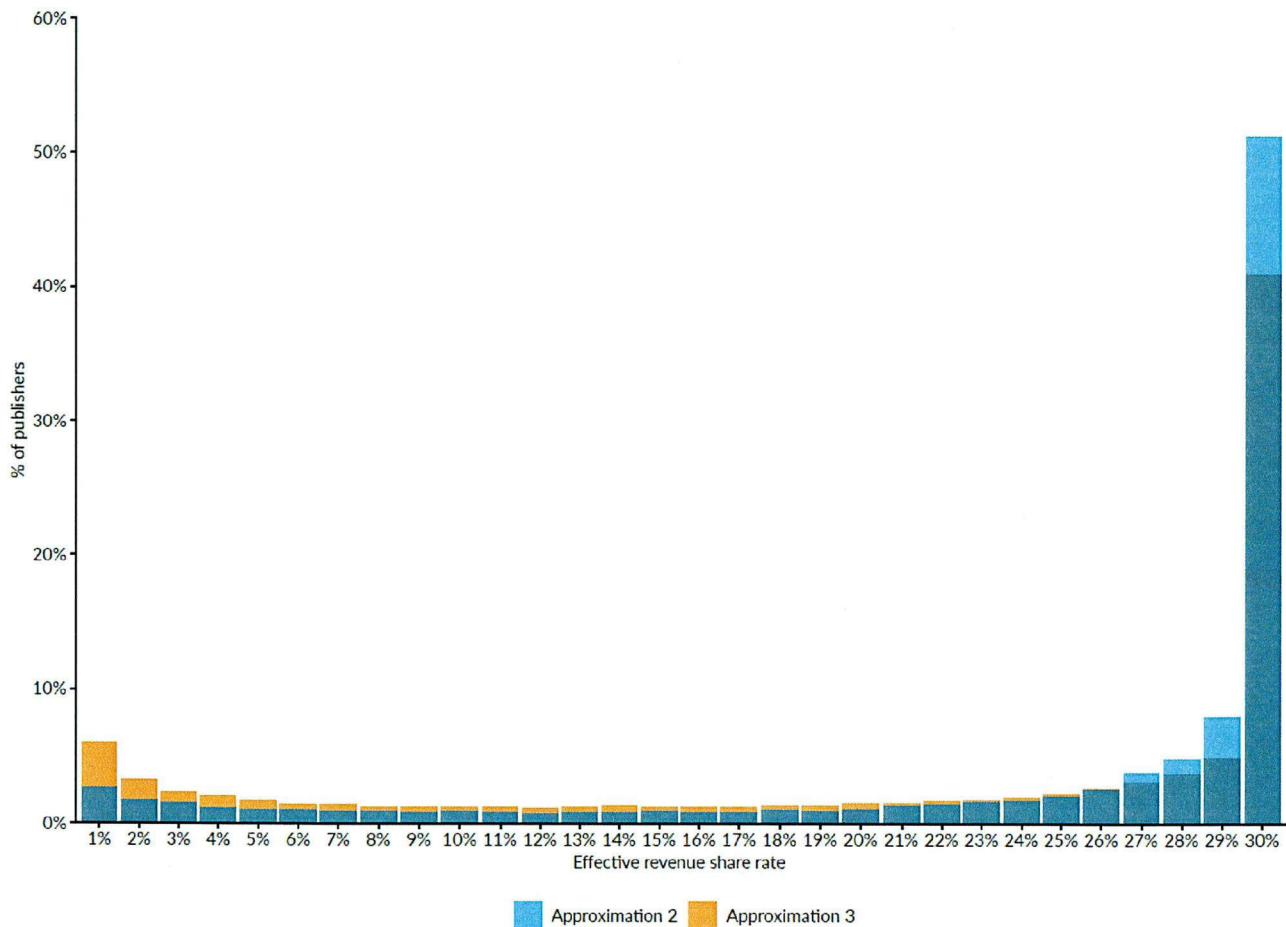
4.2.1. Available evidence indicates that publishers vary significantly in their revenue shares

171. Given the lack of data on individual publishers’ sales of Steam keys, in Section 4.1, I estimated publishers’ average effective revenue share using approximations of publishers’ Steam key sales. In this section, I analyze publisher-level approximations of effective revenue shares based on two sets of assumptions (Approximations 2 and 3) to demonstrate the need for individualized inquiry to calculate publishers’ effective revenue shares and to illustrate what individualized inquiry might reveal about the lack of commonality in antitrust impact. My analysis of these data suggests significant variation in effective revenue share rates across publishers using both approximations.
172. Exhibit 7 shows that, after I correct Dr. Schwartz’s calculations and account for Steam keys, publishers’ effective revenue shares vary both within and across approximations. Under both approximations, revenue shares for publishers in the proposed class can range as low as zero percent.³³⁶ Importantly, Exhibit 7 shows the results that different approximations of Steam key sales can yield when calculating publishers’ effective revenue shares. Exhibit 7 shows the distribution of publishers’ revenue shares under Approximations 2 (blue bars) and 3 (orange bars). The overlap between these bars is shown as the teal bar. Under Approximation 3 (the orange and teal bars), a larger proportion of publishers have approximated effective revenue shares of 20 percent or lower relative to Approximation 2. Under Approximation 2 (the light blue and teal bars), a larger proportion of publishers have approximated effective revenue shares near 30 percent.

³³⁵ Schwartz Report, ¶ 242. Dr. Schwartz also assumes, without proof, that Steam keys would be provided and used in the same manner in the but-for world absent Valve’s alleged conduct as they are provided and used in the actual world, an assumption I explore further in Section 4.4 below. See Schwartz Report, Footnote 827 (“In the but-for world, I assume that Steam Keys would have been provided and used in the same manner as in the real world and focus my determination of the but-for price solely on those purchases made through Steam and thus subject to the Valve commission charge.”).

³³⁶ As discussed in Appendix Section 17.1, I take Dr. Schwartz’s processing of Valve’s transaction data as given, with minor adjustments. In some instances, Dr. Schwartz’s data processing gives negative calculated nominal revenue shares for some publishers, leading to negative calculated effective revenue shares. I exclude publishers with a revenue share rate less than or equal to zero from my analysis in this section. Under Approximations 2 and 3, 102 and 266 publishers have an effective revenue share under 0.1 percent. See Workpaper 18.

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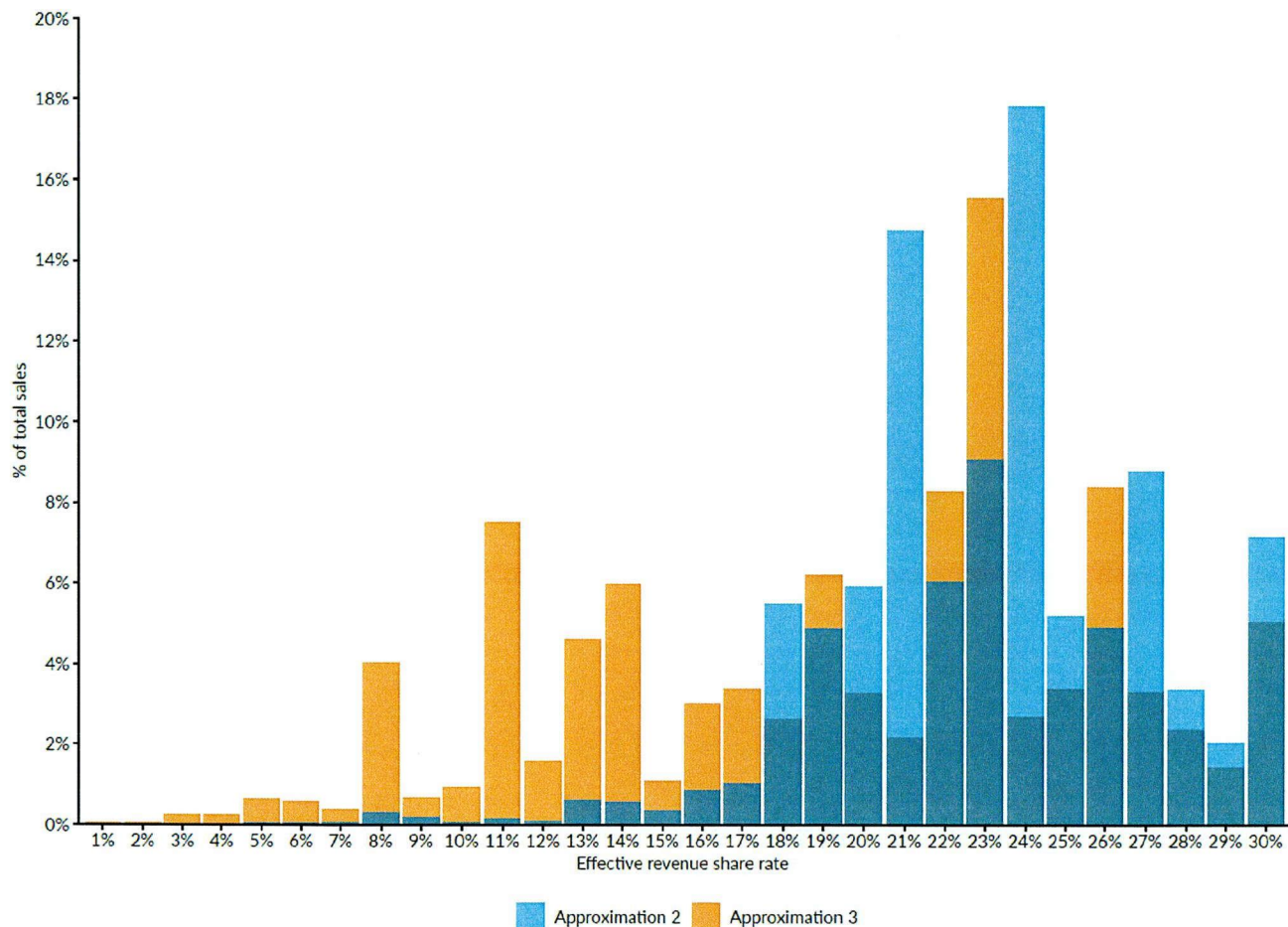
Exhibit 7***Publishers’ approximated effective revenue shares vary within and across approximations, January 28, 2017–December 31, 2022***

Source: Schwartz Report, backup materials; Steam Key Redemptions Data

Note: The effective revenue share rate for each publisher is calculated as described in Section 4.1. Revenues from Steam key sales are estimated using “Approximation 2” (blue bars) and “Approximation 3” (orange bars) as described in Section 4.1. The teal portion of each bar represents the overlap between the bars for each approximation. Publishers are grouped into bins by the integer ceiling of their revenue share, after rounding to the nearest thousandth of a percent; for example, under Approximation 2, Dark Catt has an effective revenue share of 9.7 percent, so it is in the 10 percent bin. There are 152 publishers with a revenue share rate of over 30 percent who are excluded under Approximation 2, and 149 publishers with a revenue share rate over 30 percent are excluded under Approximation 3. One publisher with a revenue share less than 0.0005 percent is excluded under Approximation 2, and two publishers with a revenue share less than 0.0005 percent are excluded under Approximation 3.

173. The differences in effective revenue shares, both between publishers and across approximations, are economically meaningful. Exhibit 8 demonstrates the economic effects by weighting the approximated effective revenue shares under each approximation by dollars spent on Steam. Specifically, the figure measures spending on Steam at each revenue share rate. While many publishers have effective revenue shares at or near 30 percent (in the rightmost bin in Exhibit 7), the vast majority of spending on Steam occurs for games that have effective revenue shares lower than 30 percent (as Exhibit 8 shows) under both approximations. Similar to Exhibit 7, a much larger proportion of sales on Steam are attributable to publishers with even lower revenue shares under Approximation 3 relative to Approximation 2.

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Exhibit 8***Publishers’ approximated effective revenue shares vary by share of sales on Steam, January 28, 2017–December 31, 2022***

Source: Schwartz Report, backup materials; Steam Key Redemptions Data

Note: The effective revenue share rate for each publisher is calculated as described in Section 4.1. Revenues from Steam key sales are estimated using “Approximation 2” (blue bars) and “Approximation 3” (orange bars) as described in Section 4.1. The teal portion of each bar represents the overlap between the bars for each approximation. Publishers are grouped into bins by the integer ceiling of their revenue share, after rounding to the nearest thousandth of a percent; for example, under Approximation 2, Dark Catt has an effective revenue share of 9.7 percent, so it is in the 10 percent bin. There are 152 publishers with a revenue share rate of over 30 percent who are excluded under Approximation 2, and 149 publishers with a revenue share rate over 30 percent are excluded under Approximation 3. One publisher with a revenue share less than 0.0005 percent is excluded under Approximation 2, and two publishers with a revenue share less than 0.0005 percent are excluded under Approximation 3. Total sales are defined as the sum of gross sales net of returns and taxes from the Steam package and microtransaction revenue data.

174. My analysis using any approximation discussed above is conservative—it understates the potential differences in effective revenue shares across publishers because it assumes publishers uniformly sell their games outside of Steam using Steam keys at the game’s price on Steam, or 20 percent below that price. However, as discussed next in Section 4.2.2, individualized factors and business practices related to pricing Steam keys lead to large differences in average prices for many games sold on Steam and outside of Steam using Steam keys.
175. In sum, my analysis, based on the available data and using a range of assumptions, contradicts Dr. Schwartz’s claim that “all or virtually all putative class members were

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impacted by the supracompetitive fees charged by Valve,” and contradicts that antitrust impact to each publisher can be measured using common evidence.³³⁷ My analysis of the available data suggests that individualized inquiry is necessary to calculate publishers’ effective revenue shares and that this inquiry would reveal wide variation in effective revenue share rates across publishers because of differences in publishers’ business practices related to Steam keys. Variation in publishers’ effective revenue shares leads to variation in the extent to which publishers were affected by Valve’s allegedly anticompetitive conduct. Further, across both approximations presented, many publishers fall within or below the 12 to 20 percent range Dr. Schwartz claims would be competitive in his but-for world, suggesting that individualized inquiry is required to identify whether a given publisher was injured by the alleged conduct.³³⁸ In the next section, I explain the individualized factors and business practices that would require individualized inquiry.

4.2.2. Individualized factors and business practices affect effective revenue shares

176. As explained above, calculating each publisher’s effective revenue share requires unavailable data about the quantities and prices of Steam keys each publisher sold. Different assumptions about these data lead to different approximation methods (as discussed in Section 4.1). No approximation method, using available data, accounts for the variety of individualized factors and business practices that affect how publishers determine prices for Steam keys.
177. First, publishers’ pricing strategies may vary depending on the distribution practices of the Steam key resellers they choose. For example, a publisher may offer its game for a revenue share with each unit sold through the Humble Store, or a publisher may offer its game as part of a bundle on Humble Bundle, which often includes “pay what you want” systems where users select a price point that they want to pay and may receive more or fewer items depending on the selected price. A publisher may also offer its game for a lump sum payment from Humble Choice (previously Humble Monthly), which is a monthly service offered by Humble.³³⁹ A publisher may also choose to sell

³³⁷ Schwartz Report, ¶ 301. Note that while I focus on Steam keys in this section, there are other important sources of differences in revenue shares. Numerous publishers qualify for lower nominal revenue shares of 20 percent and 25 percent, regardless of their use of Steam keys. I find that since 2019, [REDACTED] ([REDACTED] percent of all revenue on Steam) qualify for a revenue share of 25 percent, and another [REDACTED] ([REDACTED] percent of all revenue on Steam) qualify for a revenue share of 20 percent. In other words, nearly [REDACTED] of all consumer spending on Steam qualified for a reduced revenue tier. See Workpaper 19.

³³⁸ Complaint, ¶¶ 4 (“Valve uses its dominance over PC game distribution to impose and anticompetitively maintain a 30% commission on nearly every sale made through its store”), 8 (“in a competitive market, after this first-mover period, the entry of other rivals with an electronic distribution model like the Steam Store would have quickly forced Valve’s commission levels down to competitive levels by competing on price (i.e., by charging lower commissions)”). In Section 4.3 below, I offer further discussion of publishers with revenue share rates within and below the 12 to 20 percent “competitive” range Dr. Schwartz claims.

³³⁹ [REDACTED]

[REDACTED]; Humble Support, “Pay What You Want and Contribution Sliders,” available at <https://support.humblebundle.com/hc/en-us/articles/204387088-Pay-What-You-Want-and-Contribution-Sliders>, accessed on April 18, 2024. [REDACTED]

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Steam keys on its own website, where pricing might depend on the cost of operation of the website, among other factors.

178. Second, publishers may sell their keys on different Steam key resellers to differing degrees. For example, Plaintiff Wolfire’s title *Overgrowth* is available for purchase as a Steam key through the Humble Store, but not on Green Man Gaming.³⁴⁰ Individual Steam key resellers may also offer different terms to different publishers. For example, Wolfire did not pay a revenue share to Humble for sales on the Humble Store or through the Humble Widget.³⁴¹ Without more information on the terms between each individual publisher and Steam key reseller, and sales through those resellers, it is not possible to reliably estimate each publisher’s effective revenue share. That is, the assessment of effective revenue shares among publishers is mainly influenced by individualized factors.
179. Third, publishers may choose different pricing strategies when selling their games on Steam, where the game will be played, as compared to selling their game outside of Steam through Steam keys. For example, data from pricing aggregator *isthereanydeal.com* (“ITAD”) shows that *Call of Duty: Black Ops* had an average daily list price of \$42.46 on Steam key reseller Green Man Gaming, but was 13 percent cheaper on Steam, with an average daily list price of \$37.64, on days where pricing data for the title were available for both Steam and Green Man Gaming. Conversely, *Elden Ring* has an average daily price list price of \$52.89 on Green Man Gaming, but was 11 percent more expensive on Steam, with an average daily list price of \$59.56.³⁴² Discounts for these titles are also offered at different frequencies and magnitudes on these stores. For example, *Elden Ring* was offered on Steam for 2 percent of the days that pricing information was available for the title on both Steam and Green Man Gaming at an average discount of 30 percent, but was offered at a discount on Green Man Gaming on 84 percent of days at an average discount of 14 percent.³⁴³

Itch.io offers a pricing structure similar to Humble’s “pay what you want” scheme for games sold on the platform, although only some games sold on itch.io include a Steam key. See Itch.io, “Top Games with Steam Keys,” available at <https://itch.io/games/steam-key>, accessed on April 18, 2024; Itch.io, “Pricing,” available at <https://itch.io/docs/creators/pricing>, accessed on April 19, 2024 (“On itch.io any item that can accept money is automatically ‘pay what you want’ or ‘pay any amount above the minimum’, yet there are many more options to let you set the right pricing for your content.”).

³⁴⁰ Humble Bundle, “Overgrowth,” available at <https://www.humblebundle.com/store/overgrowth>, accessed on April 18, 2024. *Overgrowth* is not listed on the Green Man Gaming Store as of April 15, 2024.

³⁴¹ Deposition of Jeffrey Rosen (Wolfire), November 17, 2023, pp. 62–63 (“Q. So did [Wolfire] ever -- so for the Humble Store, is there a -- the Humble -- what you referred to as the Humble tip is the -- was 15 percent? A. Correct. Q. Subject to some changes over time that you don’t recall; is that correct? A. Correct. Q. Okay. But Wolfire, did it ever pay a Humble tip? A. I don’t believe so.”); Deposition of David Rosen, 30(b)(6) (Wolfire), November 30, 2023 (“Rosen, David Deposition”), p. 101 (“Q. Going back to the Humble widget then, what does Humble charge Wolfire as a commission or a revenue share on each sale using the Humble widget? A. I think it’s either 5 percent or 0 percent. They may have waived the fee in because Wolfire created the widget in the first place and all of the infrastructure around it. Q. So it’s possible that Wolfire pays a different commission or revenue share to Humble than other developers using the Humble widget? A. Yes.”).

³⁴² Workpaper 20. These titles are not unique—many games are priced either higher or lower on Steam than on Green Man Gaming. See Workpaper 21. In Section 7.1 below, I further discuss how game prices on Steam and other platforms are not consistent with Valve’s alleged PMFN.

³⁴³ Workpaper 20.

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180. Finally, publishers may choose different pricing strategies when selling the same game on different storefronts using Steam keys due to the distinct business strategies of each storefront. For example, *Rust* was available on both the Humble Store and Green Man Gaming at similar average daily list prices of \$19.78 and \$18.45 on days where pricing data is available from ITAD from both stores for this title. Despite these similar average daily list prices, the title was offered for sale at different frequencies and magnitudes on each store. On the Humble Store, *Rust* was on sale for just 2 percent of days, but was listed at an average discount of 66 percent. On Green Man Gaming, however, *Rust* was on sale for 77 percent of days at an average discount of 10 percent.³⁴⁴
181. While ITAD offers data on the prices at which games were listed on a given day, it does not offer the timing or prices at which consumers purchased the games.³⁴⁵ This indicates that available data cannot reliably capture individualized differences among publishers in setting Steam key prices across different reseller sites, affecting their effective revenue shares. Individualized inquiry would be required to determine the prices at which each publisher sells their games on each Steam key reseller.
182. In sum, accurate estimates of effective revenue shares require individualized inquiry into each proposed class member's business practices related to Steam keys. Without this information, which has not been produced in this litigation, Plaintiffs cannot accurately estimate the effective revenue share for a given publisher, and therefore Dr. Schwartz's method is incapable of using class-wide evidence to determine the extent to which publishers were impacted by the alleged conduct. Without class-wide evidence of the publishers' effective revenue shares in the actual world, Plaintiffs cannot prove, with class-wide evidence, that they are higher than the 12 to 20 percent revenue share range Dr. Schwartz claims would be prevalent in his but-for world.

4.3. Analysis of available data shows that Plaintiffs cannot reliably identify which members of the proposed class were impacted by Valve's alleged conduct

183. In the previous sections, I establish that calculating the effective revenue share for each publisher requires individualized data on Steam key sales, but that these data were not produced in this litigation and are not available on a class-wide basis.³⁴⁶ Given that the necessary data are not available on a class-wide basis, different approximations for Steam key sales, based on different assumptions about the quantities and prices of Steam keys sold, can lead to large differences in the effective revenue shares calculated for each publisher. These differences affect which publishers fall above or below Dr. Schwartz's thresholds for antitrust impact—underscoring the fact that establishing injury in this matter requires individualized inquiry.
184. Dr. Schwartz offers several revenue share thresholds in his report. From his proposed assessment of class-wide impact, Dr. Schwartz claims that Steam's revenue share would

³⁴⁴ Results presented for *Rust* are not unique—similar results hold across more than 6,000 games for which Humble Store and Green Man Gaming pricing data are available from ITAD. See Workpaper 22.

³⁴⁵ I discuss the data collected from ITAD in greater detail in Appendix Section 18.

³⁴⁶ Note that while Wolfire has produced data in this matter related to sales of its games on other storefronts, these data do not delineate sales of Steam keys from sales through other delivery methods. See, e.g., WOLFIRE_00151799.

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have been between 12 and 20 percent but for Valve’s alleged conduct.³⁴⁷ In his analysis of damages, Dr. Schwartz further argues that publishers universally experienced a [REDACTED] percent overcharge, calculated as the percentage difference between Valve’s average nominal revenue share of [REDACTED] percent during the proposed class period and the but-for average revenue share of 17.7 percent from his damages methodology.³⁴⁸

185. Because Dr. Schwartz does not acknowledge the role of Steam keys in publishers’ revenue shares, he does not consider that many publishers’ revenue shares are well within the 12 to 20 percent range he offers and that many proposed class members are well below the 12 percent minimum. Further, while Dr. Schwartz does not argue directly that all publishers would have had a 17.7 percent revenue share but for Valve’s alleged conduct, I also consider this figure for illustrative purposes in my analysis.
186. Whether a given publisher’s revenue share is higher or lower than any “competitive” but-for revenue share depends on the assumptions underlying the approximation method used for Steam key sales. Different approximations for Steam key sales lead to different conclusions as to which publishers are impacted, and to what degree. Exhibit 9 reports the fraction of publishers whose revenue shares were lower than various benchmark revenue share rates under alternative approximations for Steam key sales.
187. First, looking row by row, note that many publishers had an effective revenue share lower than the 12 percent minimum revenue share that Dr. Schwartz suggests from his assessment of class-wide antitrust impact. More publishers pay effective revenue shares less than the 17.7 percent from Dr. Schwartz’s damages methodology. Second, looking across columns, note that **the fraction of publishers who fall below each threshold changes depending on the approximation of Steam key sales.** Individual publishers switch from being impacted to unimpacted depending on the approximation of Steam key sales. The available data cannot reliably identify which publishers were impacted by the challenged conduct, which makes Dr. Schwartz’s method incapable of doing so on a class-wide basis.
188. To illustrate this point more concretely, take the example of Named Plaintiff Wolfire. During the Class Period, Wolfire sold [REDACTED] units on Steam as reported in Valve’s package revenue data but was issued [REDACTED] keys and had [REDACTED] key redemptions for its titles. When I assume that the number of Steam keys sold equals the number of keys redeemed and assume key prices to be equal to Steam’s prices, Wolfire has an effective revenue share of 11 percent. If I instead assume the number of keys sold equals the number of keys issued, Wolfire’s effective revenue share falls to 8 percent. Finally, if I assume the number of keys sold is the number of keys redeemed and assume key prices are 20 percent lower than Steam prices, Wolfire’s effective revenue share rate rises to 13 percent.³⁴⁹ In other words, Wolfire moves above and below Dr. Schwartz’s 12 percent “minimum share” depending on the assumptions made about Steam key sales.

³⁴⁷ Schwartz Report, ¶ 313 (“The Platform Competition Model approach, yardstick approach, and empirical approach conducted above suggest a but-for take rate of between 12% and 20%.”). I discuss Dr. Schwartz’s “empirical” approach in detail in Section 8. I understand that Professor Ashley Langer discusses Dr. Schwartz “yardstick” and “Platform Competition Model” approaches in her report.

³⁴⁸ Schwartz Report, ¶ 377 (“I calculate the but-for effective commission rate to be 17.7%, representing a [REDACTED]% decrease from the effective Steam commission rate during the period from January 28, 2017 through December 31, 2022.”).

³⁴⁹ Workpaper 23.

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The quantity of keys Wolfire sold and the prices at which those keys were sold are not observed. Publishers do not share this information with Valve and, in some instances, these data may not be available at all; testimony from David Rosen on behalf of Wolfire shows that Wolfire did not keep records of the number of Steam keys it sold through platforms such as Humble Bundle.³⁵⁰

Exhibit 9***Available data cannot reliably identify which publishers were impacted***

		Proportion of publishers below effective revenue share threshold			
	Effective revenue share threshold	Approximation 1	Approximation 2	Approximation 3	Approximation 4
1.	12.0%	15%	14%	25%	23%
2.	17.7%	21%	19%	32%	30%
3.	20.0%	23%	21%	35%	33%

Source: Schwartz Report, backup materials; Steam Key Redemption Data; Steam Key Requests Data

Note: This table displays the percentage of publishers with an effective revenue share at or below each threshold for four methods of computing effective revenue shares, excluding Valve. Publishers with an effective revenue share that is negative, missing, or greater than 30 percent are excluded. I discuss the underlying assumptions and methodology for each approximation presented in Section 4.1, and in greater detail in Appendix Section 12.

189. Similar patterns to those illustrated by Wolfire affect many publishers depending on the assumptions used, with many publishers moving above and below Dr. Schwartz’s 12 percent “minimum share” threshold. For example, if I assume the number of keys redeemed is equal to the number of Steam keys sold and assume that those keys were sold at Steam prices, 15 percent of publishers’ revenue share rates fall below the 12 percent threshold. If I instead assume that the number of keys issued is equal to the number of keys sold, then 25 percent of publishers’ revenue share rates fall below the threshold. However, more than 11 percent of publishers move from above the 12 percent threshold to below it, while 2 percent of publishers move from below the threshold to above it—some publishers have fewer keys issued during the proposed class period than keys redeemed.³⁵¹
190. Finally, as discussed in Section 4.2.1, while each approach to approximating Steam key sales in Exhibit 9 leads to a different measure of alleged antitrust impact (if any) for each publisher, each approach *understates variation in impact* across publishers, because each method applies the *same* approximation method, based on the same assumptions, for all publishers. In practice, individual publishers may use different sales strategies for Steam keys.
191. My findings in this section underscore the need for individualized inquiry to establish accurate revenue shares in any examination of antitrust impact and reveal that Dr. Schwartz’s method is incapable of showing antitrust impact or estimating damages on a class-wide basis. In sum, individualized inquiry is necessary to identify which members of the proposed class (if any) were harmed by the alleged conduct. My analysis reveals

³⁵⁰ Rosen, David Deposition, pp. 182–183 (“Q. Does Wolfire have records, though, of how many customers at the point of purchase choose a DRM-free version versus a Steam key version when buying through Humble? [A.] Not that I know of.”).

³⁵¹ Workpaper 24. This observation is consistent with the fact that some keys redeemed during the proposed class period may be issued prior to the proposed class period.

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substantial differences in the effective revenue shares of individual publishers depending upon the assumptions made.

4.4. Plaintiffs' assessment of harm does not properly account for Steam keys in the but-for world

192. Establishing that Valve charges supracompetitive revenue shares requires a comparison of actual effective revenue shares in the actual world to estimated revenue shares in the but-for world—accounting for Steam keys in both instances. Plaintiffs' claims of common antitrust impact across the proposed class rely on two critical assumptions regarding Steam keys in the but-for world. The first assumption is that, absent the challenged conduct, Valve would adjust its allocation of Steam keys across proposed class members in a common way—for example, by making no change, or imposing a common reduction in the issuance of keys across publishers.³⁵² The second assumption is that publishers would respond by adjusting their business strategy around Steam keys (e.g., requests, pricing, and resellers) in a common way. As Dr. Schwartz acknowledges, his analysis of Valve's but-for revenue share *assumes*, but does not demonstrate, that these assumptions are satisfied.³⁵³ Both of these assumptions are at odds with economic logic, facts in the record, and Dr. Schwartz's deposition testimony.³⁵⁴
193. Valve operates a business model in which it provides Steam keys to publishers at no charge, and publishers can sell these keys on other sites or directly to users. If Valve decreases its nominal revenue share, Plaintiffs cannot simply assume Valve will continue to operate the Steam key program unchanged, and there is no evidence to justify assuming that Valve will adjust Steam keys in a common fashion across all publishers. Valve's current key approval process is individualized, and there is no evidence to justify assuming Valve would abandon this process in the but-for world. Under the current approval process, publishers may submit an application to request keys, which Valve employees then review "on a case-by-case basis."³⁵⁵ I also understand

³⁵² Similar to this assumption, Dr. Schwartz's analysis of damages assumes that the revenue share rate charged to each publisher would decrease by approximately [REDACTED] percent in the but-for world by comparing his calculation of Valve's average nominal revenue share over the Class Period to his calculation of Valve's average revenue share in the but-for world. Dr. Schwartz offers no support for this assumption. See Schwartz Report, ¶ 401 ("To determine the overcharge associated with a given commission rate, I scale the commission rates calculated in the transaction data by a ratio of the but-for commission rate to the overall effective commission rate in the damages period ... This is equivalent to calculating the overcharge as [REDACTED]% of the commissions paid.").

³⁵³ Schwartz Report, Footnote 827 ("In the but-for world, I assume that Steam keys would have been provided and used in the same manner as in the real world and focus my determination of the but-for price solely on those purchases made through Steam and thus subject to the Valve commission charge.").

³⁵⁴ Dr. Schwartz additionally notes in his deposition testimony that Valve's policies regarding Steam keys are irrelevant to his analysis. However, Dr. Schwartz fails to consider the role of Steam key sales in reducing publishers' revenue shares for Steam-related revenues. See Schwartz Deposition, pp. 190–191 ("Q. So as far as you're concerned, in the but-for world, Valve might change its policies regarding Steam keys? A. In the but-for world ... [w]hether they change other policies with respect to Steam keys, including where they can be utilized, with respect to which outlets, how many they issue, they might change their policies. There's no way to know, nor does it matter for purposes [sic] of my analysis.").

³⁵⁵ Email chain from Erik Peterson to Tom Giardino et al., "RE: New Key Request Wizard," March 14, 2018, VALVE_ANT_0057685–695 at 685 ("To make the process of requesting Steam keys less confusing, we're redesigning the key request wizard to make it much more clear to developers which type of key they should be requesting ... Once a batch of keys has been requested, they appear in front of a person at Valve for review. The majority of those key requests are just fine, and they get approved. Sometimes, Steam Key requests get denied, and developers have questions about why they aren't getting the keys they requested."), 695 ("You can request as many keys as you need, but your request will be reviewed on a case by case basis by Valve staff to make sure Steam customers are being treated fairly and keys are not being abused."); Email chain from Jason Ruymen to

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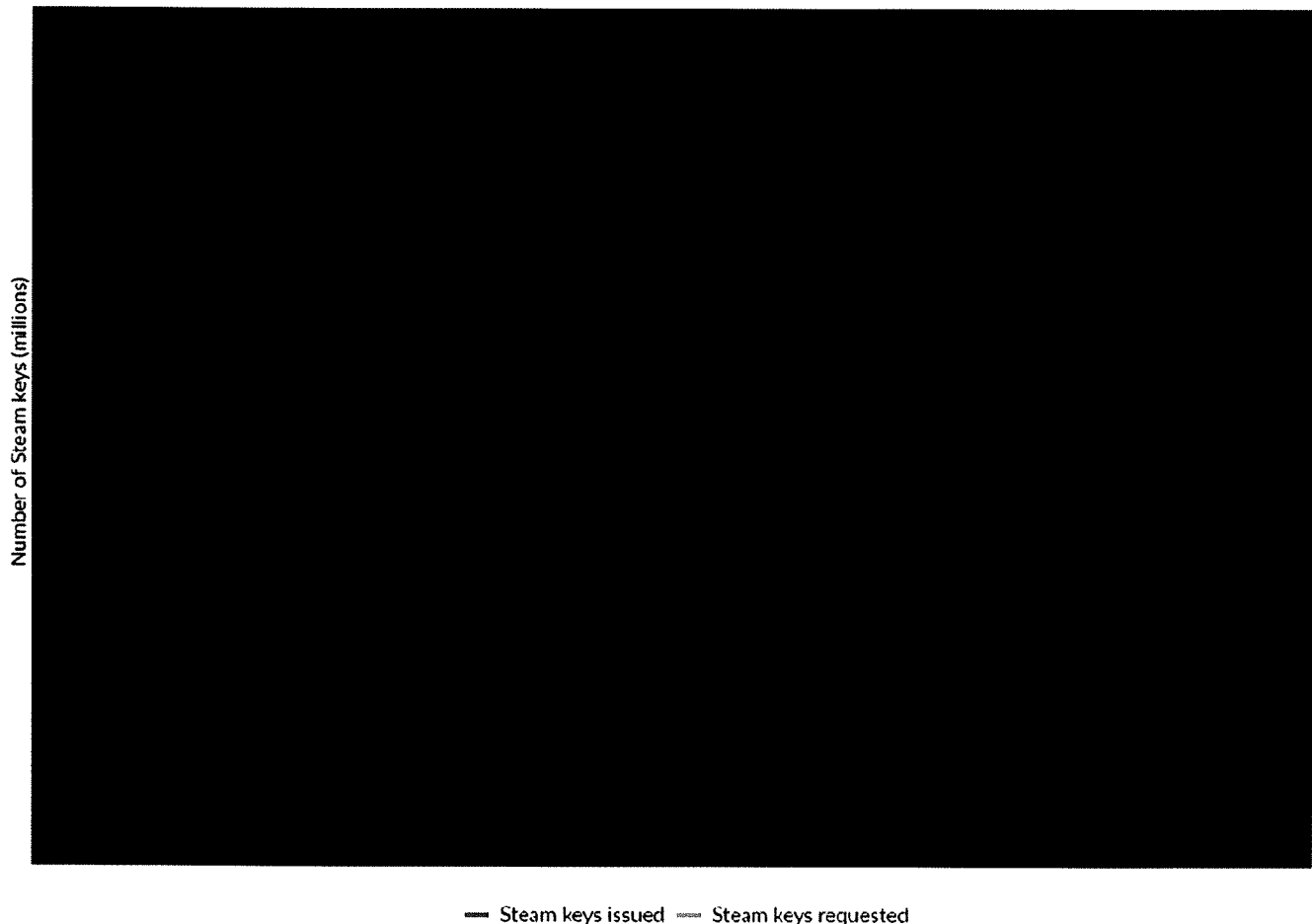
that the practices regarding supply of Steam keys to publishers evolved over time, and that they are not clear-cut.³⁵⁶ Plaintiffs and their experts provide no evidence that Valve would abandon this individualized approach in the but-for world.

194. Valve’s past behavior illustrates its individualized approach to the allocation of Steam keys. Exhibit 10 summarizes the history of Steam keys requested and issued. As this figure shows, the total number of keys issued per year decreased between 2017 and 2018, following the introduction of Steam Direct. The number of keys issued continued to decrease between 2018 and 2019 after the launch of Steam’s revenue tiers.

Erik Peterson and Tom Giardino, “RE: Game Keys in Bulk,” October 4, 2017, VALVE_ANT_1188589–591 at 590 (“In regards to your previous email about why your latest requests were denied, we reviewed them on a game-by-game basis and approved 4 of your requests.”). Current Steam documentation suggests this review on a “case-by-case” basis applies beyond an initial 5,000 keys provided to each game launched on Steam. See Steamworks, “Steam Keys,” available at <https://partner.steamgames.com/doc/features/keys>, accessed on April 18, 2024 (“Games and applications launching on Steam may receive up to 5,000 Default Release Steam Keys to support retail activities and distribution on other stores. After that, all Steam Key requests are reviewed on a case-by-case basis.”).

³⁵⁶ Deposition of Kristian Miller (Valve), October 3, 2023 (“Miller Deposition”), pp. 104–105 (“Q. So what was the -- how -- what was the change from the -- the rule, guideline or policy before 2015, 2016 to after? A. Again, there was no real policy. I think there was just more awareness within the team that we wouldn’t just blindly give out gigantic ranges of keys that -- yeah, that there was a more sensible way to do things.”).

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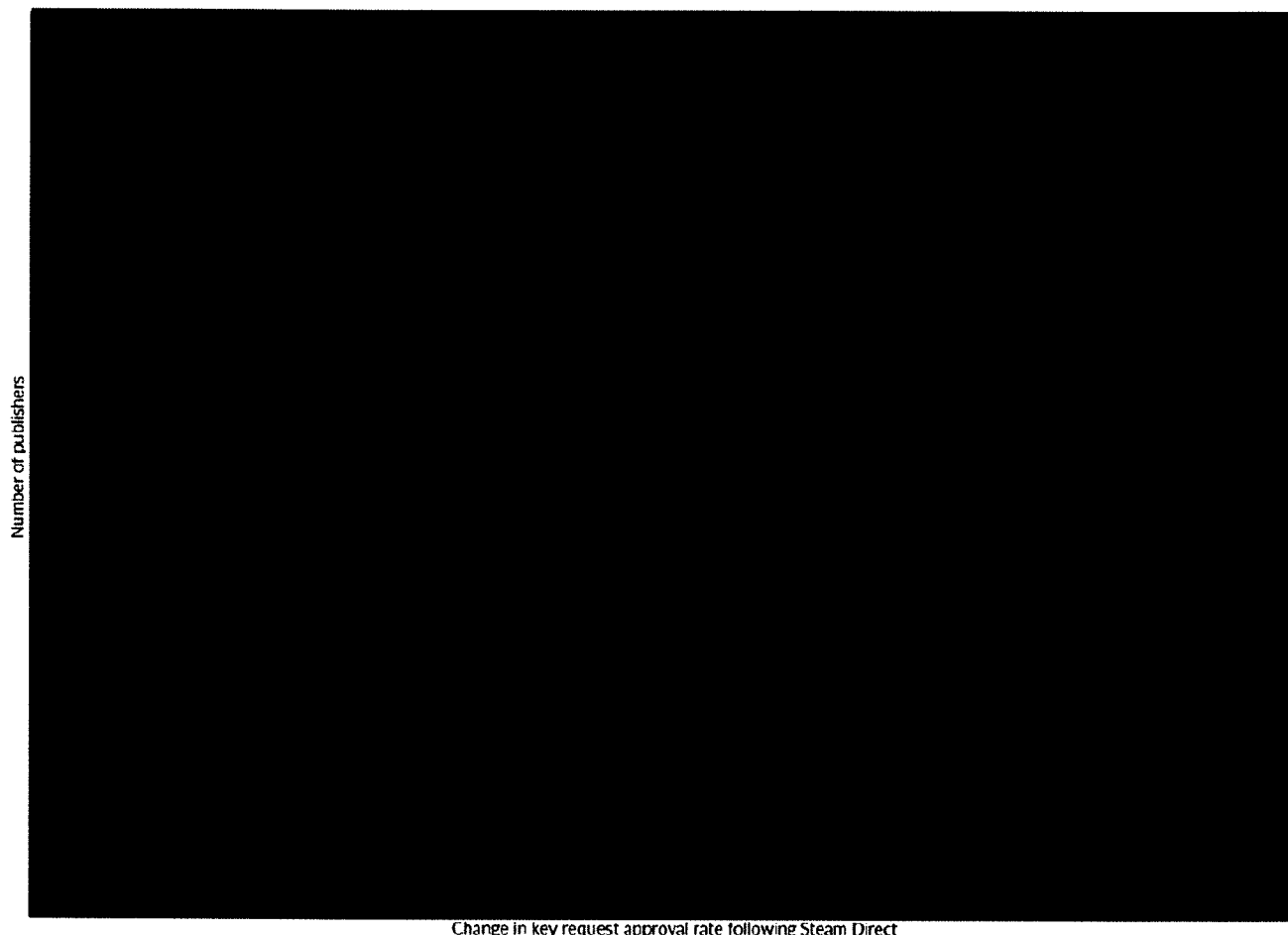
Exhibit 10***Steam keys requested and approved (issued), 2013–2022***Source: *Steam Key Requests Data*

Note: I exclude keys requested where the name associated with that key indicates that it was unlikely to have been sold or intended for sale, as I explain in Appendix Section 17.2.

195. Underlying this overall reduction in the number of keys issued are varying changes in the rates at which key requests were approved for each publisher. In the two years before the launch of Steam Direct, █ percent of publishers were granted more than 90 percent of the keys they requested. In the two years following, only █ percent of publishers received more than 90 percent of their requested keys.³⁵⁷ Importantly, publishers with an increase in rejections of key requests were not uniformly affected. Exhibit 11 shows the change in the ratio of keys issued to keys requested for all publishers who requested a similar number of keys both before and after the launch of Steam Direct. A majority of these publishers saw zero or little change in their rejection rate of key requests, but a significant proportion saw varied increases in their rejection rates.

³⁵⁷ I note that this analysis is restricted to publishers who made requests for keys, therefore holding stable the compared populations in the pre- and post-Steam Direct periods. I additionally conduct a sensitivity restricting to publishers for which the number of keys requested after the launch of Steam Direct was comparable to the number of keys requested before the launch of Steam Direct to account for potential changes in publisher behavior and find substantively similar results. See Workpaper 25.

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Exhibit 11***Valve's reductions in key allocations after Steam Direct varied across publishers***

Source: Steam Key Requests Data

Note:

[1] Steam Direct launched on June 13, 2017. This analysis is restricted to publishers who have at least one key request within two years before and at least one key request within two years after the launch of Steam Direct. The change in key request approval rate following Steam Direct is calculated as the approval rate during the two-year period after the launch of Steam Direct minus the approval rate during the two-year period before the launch of Steam Direct.

[2] This analysis only considers publishers whose number of keys requested in the two-year period after Steam Direct is within 20 percent of the number of keys requested in the two-year period prior to Steam Direct.

[3] There are 257 publishers considered in this analysis.

[4] The x-axis measures the difference between the Steam key approval rate in the two-year period after the launch of Steam Direct minus the Steam key approval rate in the two-year period before the launch of Steam Direct.

196. To illustrate the highly individualized process of key request approvals, [REDACTED], the developer of hit indie game [REDACTED], was issued all of the [REDACTED] and [REDACTED] keys he requested in the two-year periods before and after the launch of Steam Direct. These keys were requested for stated reasons ranging from resale on the Humble Store and participation in key bundles to keys given away for charitable donations.³⁵⁸ In

³⁵⁸ As discussed in Appendix Section 17.2, publishers' stated reasons for requesting keys are available for many requests in the Steam Key Requests Data after March 5, 2018 and, in some instances, publishers offer notes providing additional context for their requests. However, this data only offers publishers' *stated* reasons for requesting keys; additional individualized inquiry would be required to determine how any issued keys were ultimately used.

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contrast, ██████████ was issued ██████ percent of its ██████ requested keys prior to the launch of Steam Direct, but was issued only ██████ percent of the more than ██████ keys it requested in the two years following the announcement. On January 9, 2019, ██████████ made two requests for Steam keys “to be used for a promotion at Humble Bundle”—one request for ██████ keys for the game ██████ that Valve denied, and one for an additional ██████ keys for the game ██████ that Valve approved.³⁵⁹

197. Finally, even if Valve were to impose uniform changes to the Steam key program in the but-for world, publishers might respond differently by changing their key requests, pricing, and resellers (see Section 4.2). As an example, consider publishers’ responses to Valve’s reduction of the nominal revenue share rates in 2018. The average ratio of keys requested per unit sold on Steam across publishers requesting Steam keys for their games dropped from ██████ keys requested per unit sold in the three years prior to the introduction of the new revenue share tiers to ██████ keys requested per unit sold in the three years following. However, this change was not uniform across publishers—while ██████ percent of publishers reduced their reliance on Steam keys following the announcement of the change, ██████ percent of publishers *increased* their reliance on Steam keys.³⁶⁰

³⁵⁹ Workpaper 26.

³⁶⁰ Workpaper 27. Note that some Steam features, such as Steam’s Playtest feature, which I discuss in more detail in Section 5.1.1 below, may have replaced some Steam key usage in some scenarios including, for example, beta tests of games involving a large number of users. However, I exclude from this analysis keys requested where the package name associated with the key indicates testing purposes, including beta tests.

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5. PUBLISHERS VARY IN THE BENEFITS THEY DERIVE FROM STEAM FEATURES; ASSESSING PUBLISHERS’ BENEFITS FROM STEAM FEATURES WOULD REQUIRE INDIVIDUALIZED INQUIRY

198. Plaintiffs and Dr. Schwartz claim that “[m]any users and developers are dissatisfied with the quality of Steam’s platform,”³⁶¹ that “[Valve’s] investment in Steam has [] been limited, as Valve’s anticompetitive conduct allows Steam to remain dominant without reference to its quality,”³⁶² that Valve’s conduct harms innovation,³⁶³ and that absent the alleged conduct, Steam would provide a richer set of features.³⁶⁴ Plaintiffs’ claim of common harm from this alleged low quality relies on the implicit assumption that all proposed class members would benefit from allegedly richer features in a but-for world in a similar way. In this section, I show that publishers benefit differently from current Steam features and therefore are unlikely to benefit from allegedly richer features in Dr. Schwartz’s but-for world in a similar way, and that Steam is a higher-quality platform than its competitors. Plaintiffs’ assumption to the contrary is inconsistent with industry realities and evidence in the record.

199. This section proceeds as follows:

- a. In Section 5.1, I begin by systematically documenting Valve’s history of innovation and explaining that Steam offers a rich array of features—many of which are unique—for both developers and consumers. These innovations led to Valve offering a higher-quality platform compared to its competitors. These findings run contrary to the unrepresentative evidence put forth by Dr. Schwartz that Valve has not innovated and that users and publishers are dissatisfied with the quality of Steam.³⁶⁵ Consequently, publishers’ quality-adjusted revenue shares (i.e., their revenue shares if Steam’s quality were equivalent to its competitors) are lower on Steam compared to other platforms. I also explain that many of Steam’s innovations were, in fact, introduced in response to increased competition from new competitors.
- b. In Section 5.2, I show that publishers’ quality-adjusted revenue shares vary because firms benefit differently from different Steam features.³⁶⁶ Some publishers benefit substantially from Steam’s features; these firms receive additional value for the revenue shares they pay to Valve and experience a lower quality-adjusted revenue share—they may also benefit more in Dr. Schwartz’s alleged but-for world with additional innovation. This may be especially true for publishers whose audiences value Steam’s multiplayer capabilities and social features, for publishers who benefit from developer-facing tools and Steam’s discoverability, and for publishers who need

³⁶¹ Schwartz Report, ¶ 223.

³⁶² Complaint, ¶ 58.

³⁶³ Complaint, ¶ 21 (“Innovation is the engine of the video game industry, but Valve’s imposition of its supracompetitive tax suppresses innovation and output across the industry while elevating the prices of PC games.”).

³⁶⁴ Complaint, ¶ 320 (“If the PC game distribution market were competitive, Valve would be forced to offer a competitive level of quality in its store as well, benefiting publishers.”); Schwartz Report, ¶ 240 (“In a but-for world with legitimate competition, Steam would be forced to innovate and adapt to consumer preferences in order to compete on the merits with other platforms, which would ultimately lead to better feature variety and choice for end users and developers.”).

³⁶⁵ Schwartz Report, Section 6.3.

³⁶⁶ I note that this difference in the quality-adjustment to the revenue shares experienced by individual publishers suggests that my analysis of the variation in effective revenue shares described in Section 4.2 above understates the degree to which publishers vary in their effective revenue shares.

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diverse payment options.³⁶⁷ Other publishers benefit less from current Steam features; these firms would likely benefit less from enhancements to those features in Dr. Schwartz’s alleged but-for world and may be more willing to switch to alternative platforms in response to allegedly supracompetitive revenue shares on Steam. Consistent with this, Plaintiffs do not present—and I have not seen—any evidence to suggest that richer features in the but-for world would uniformly benefit all publishers.

200. Dr. Schwartz’s analysis is incapable of determining alleged injury on a class-wide basis, as it fails to consider the differences in benefits that publishers derive from features and how these differences affect publishers’ quality-adjusted revenue shares in the actual and but-for worlds. To establish class-wide injury, Dr. Schwartz would need to account for the individual benefits to each publisher of Steam’s current features and the features available on Steam and other platforms in the but-for world. Individualized inquiry is necessary to understand these benefits, establish the extent to which each publishers’ quality-adjusted revenue shares are affected by Steam’s features, and establish the extent to which Valve’s alleged conduct raises quality-adjusted revenue shares for each publisher.

5.1. Valve’s quality-adjusted revenue share decreased over time because Valve improved Steam’s quality

201. Economists often use quality-adjusted prices to compare goods’ prices considering differences in product quality.³⁶⁸ That is, when comparing the prices of two goods or the price of the same good at two points in time, economists consider the relative *quality* of those goods. Ignoring differences in quality may lead to misleading conclusions about the relative value of two options, or the value of the same option at two points in time. For example, the price of the average new car increased from \$34,910 to \$41,263 between January 2017 and May 2021—but this increase in price was accompanied by the addition of useful features in more vehicles, including increased connectivity with smartphones (e.g., Apple CarPlay) and increased safety features like mandatory backup cameras.³⁶⁹ While the price of the average new car increased, the value that users

³⁶⁷ The term “discoverability” here is used to refer to the ease of discovering games on a platform, that is, the ease with which users can find new games and publishers can make their games known to users. Hence, “discoverability features,” which I discuss further in Section 5.2.3 below, refers to features that aid in the discovery process.

³⁶⁸ The need to adjust for quality when comparing the prices of similar goods is well established in the economic literature and by practitioners, especially in the context of differentiated products. See, e.g., the discussion of vertical differentiation (i.e., differentiation in quality) in Jean Tirole, *The Theory of Industrial Organization*, (Cambridge, MA: The MIT Press, 1988), pp. 296–298. Additionally, when calculating the Consumer Price Index, the U.S. Bureau of Labor Statistics commonly needs to compare the prices of old and unavailable goods to their new and improved counterparts. To do this, the U.S. Bureau of Labor Statistics calculates a price adjustment that considers changes to the quality of the good. The U.S. Bureau of Labor Statistics uses a variety of methods to calculate these quality-equivalent prices, including direct adjustments that account for the differences in observable characteristics between the two goods. See U.S. Bureau of Labor Statistics, “Consumer Price Index: Calculation,” September 6, 2023, available at <https://www.bls.gov/opub/hom/cpi/calculation.htm>, accessed on April 18, 2024. For example, the U.S. Bureau of Labor Statistics makes quality adjustments when calculating price changes for telecommunications services for observable characteristics, such as the number of TV channels offered or internet download speed. See U.S. Bureau of Labor Statistics, “Measuring Price Change in the CPI: Telecommunications Services,” February 9, 2024, available at <https://www.bls.gov/cpi/factsheets/telecommunications.htm>, accessed on April 18, 2024. See also, Mankiw 2023.

³⁶⁹ Kelley Blue Book, “Average New-Vehicle Prices Rise More Than \$2,000 from Last Year, Hitting All-Time Record High for May, According to Kelley Blue Book,” June 22, 2021, available at <https://mediaroom.kbb.com/2021-06-22-Average-New-Vehicle-Prices-Rise-More-Than-2,000-from-Last-Year,-Hitting-All-Time-Record-High-for-May,-According-to-Kelley-Blue->

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received at that price *also* increased, as consumers benefited from a higher-quality product. That is, the difference in these prices once they are adjusted for differences in vehicle quality (i.e., their equivalent-quality prices) is likely lower.

202. Similarly, it is important to account for the value that Steam provides to publishers when comparing Valve’s revenue share in the actual world to alleged rates in a but-for world, or to rates set by Valve’s competitors—and how that value may vary across publishers.
203. In this section, I systematically review Valve’s investments in Steam over time and evaluate how Steam’s current features compare to the features available from a subset of its competitors.³⁷⁰ As part of my review, I examine articles from industry publications, survey results produced by Epic Games in this matter, internal Valve documents, forum posts, and posts on social media sites. Exhibit 12 summarizes some salient quotations from these materials that illustrate my findings: Valve has made continual investments in creating a high-quality platform, and Steam is more feature-rich than competitor platforms.

Exhibit 12

Steam is a high-quality platform and is more feature-rich than its competitors

PC gaming's many launchers, reviewed for 2024: Steam still puts the rest to shame

26 Steam Tips for PC Gaming Noobs and Power Users

There are numerous gaming clients on PC, but none are as mature and feature-rich as Steam.

Epic Games Store vs Steam: a tale of two digital storefronts

News

By Robert Zak published September 30, 2019

Epic needs to gain some Steam

Steam Review

Valve's juggernaut remains the biggest and best choice for buying PC games online

Valve Is A Wonderful Upstream Contributor To Linux & The Open-Source Community

Written by Michael Larabel in Valve on 22 September 2023 at 06:18 AM EDT 67 Comments

Source: Appendix Section 13.2

204. In contrast to my systematic and comprehensive approach, Dr. Schwartz’s approach is anecdotal, incomplete, and based on outdated evidence, which leads him to the incorrect conclusions about Steam’s quality. Dr. Schwartz relies on selected internal emails from Valve employees, emails to Valve from users and publishers, and user posts

Book, accessed on April 18, 2024; Kelley Blue Book, “Average New-Car Prices Rise Nearly 4 Percent For January 2018 On Shifting Sales Mix, According to Kelley Blue Book,” February 1, 2018, available at <https://mediaroom.kbb.com/2018-02-01-Average-New-Car-Prices-Rise-Nearly-4-Percent-For-January-2018-On-Shifting-Sales-Mix-According-To-Kelley-Blue-Book>, accessed on April 23, 2024; Keith Barry, “New Car Features We Love—And Some We Don’t,” *Consumer Reports*, January 5, 2023, available at <https://www.consumerreports.org/cars/automotive-technology/new-car-features-we-love-and-some-we-dont-a8685547706/>, accessed on April 19, 2024.

³⁷⁰ Details of the methodology for my analysis of Steam’s and other gaming platforms’ features are in Appendix Section 13.

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on the Steam Community forums. Additionally, Dr. Schwartz relies on unrepresentative and outdated surveys conducted in 2017 by game developer Lars Doucet while ignoring Mr. Doucet’s 2018 update detailing Valve’s improvements, as well as mischaracterized deposition testimony regarding Valve’s customer support quality. His anecdotal analysis of this incomplete evidence leads Dr. Schwartz to conclude that Valve’s investment on Steam has been limited and that consumers are dissatisfied with Steam. Instead, through my systematic review of hundreds of articles and documents, I conclude that Valve’s history of innovation has made Steam a higher-quality video gaming platform than its competitors.

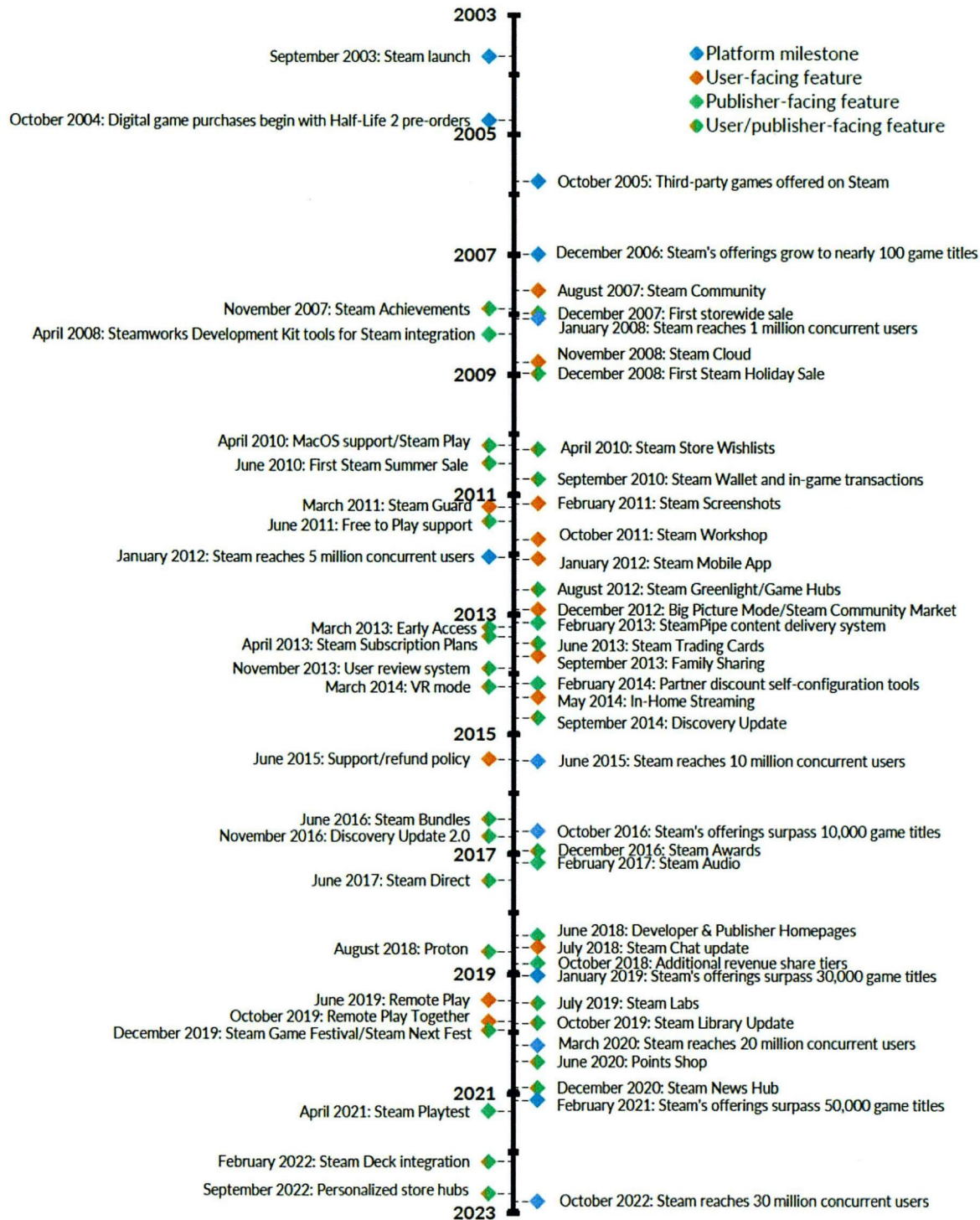
5.1.1. Valve’s innovations increased Steam’s quality over time

205. In contrast to the ad-hoc approach used by Dr. Schwartz to support his claim that Valve would provide a richer set of features in his alleged but-for world, I describe Valve’s innovations on Steam and how those innovations improved the experience of publishers and consumers on Steam over time. Valve’s continual innovations are at odds with Dr. Schwartz’s conclusion. As explained in detail in Section 2.1.1, Steam is a two-sided platform that brings together two groups: users (players) and publishers. As a result, Valve’s investments in features benefit both users and publishers, even if a particular feature is used exclusively by only one group.
206. Exhibit 13 presents a selection of the many features added to Steam and milestones reached from the launch of the platform through 2022, including both user- and publisher-facing features.³⁷¹ Platform milestones, including the introduction of third-party games on Steam discussed in Section 2.2, are highlighted in blue. User-facing features (i.e., features or functionalities that Steam users may commonly use) are highlighted in orange. Publisher-facing features (i.e., features or functionalities that publishers selling games on Steam commonly use) are highlighted in green. Additionally, features that are used by both users and publishers are highlighted in both orange and green. In Appendix Section 13.1, I describe the functionality of each of the features presented in additional detail.³⁷²

³⁷¹ I restrict my analysis to a selection of Steam features and updates through 2022 as transaction data produced by Valve in this matter relevant to publishers’ quality adjusted revenue shares are available through December 31, 2022. I understand that Valve has continued to invest in Steam, introducing additional features and improving existing features in 2023 and 2024. For example, Valve revamped the Steam user interface and introduced an improved Big Picture mode in 2023, and introduced Steam Families, an improvement replacing Steam Family sharing, in 2024. See Steam, “Steam Annual Summary: 2023,” February 19, 2024, available at <https://store.steampowered.com/news/group/4145017/view/4031353003322171823>, accessed on May 6, 2024; Steam, “Introducing Steam Families,” March 18, 2024, available at <https://store.steampowered.com/news/app/593110/view/4149575031735702628>, accessed on May 11, 2024.

³⁷² Valve sometimes takes Steam down to implement feature additions and improvements and to perform other server maintenance. Plaintiffs characterize this downtime as “disrupt[ing] gamers ... by taking Steam down for ‘planned weekly downtime maintenance.’” See Motion for Class Certification and Appointment of Co-Lead Class Counsel, *In Re: Valve Antitrust Litigation*, February 8, 2024 (“Motion for Class Certification”), p. 23; Steam Support, “Steam Downtime and Server Maintenance,” available at <https://help.steampowered.com/en/faqs/view/7016-8AFD-19F7-F397>, accessed on May 9, 2024.

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Exhibit 13***Valve steadily innovates and adds new features to improve Steam's quality***

Source: Appendix Section 13.1

207. To support his claim that users are dissatisfied with Steam's quality, Dr. Schwartz cites anecdotal evidence largely centered on user posts on Steam Community discussion

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boards and emails from individual Steam users.³⁷³ In contrast to this limited approach, I document Valve’s history and continued investment in Steam’s user-facing features, including the introduction of new features as well as improvements to existing features. Exhibit 13 shows Valve’s record of enhancing the user experience on Steam (i.e., items highlighted in orange). Examples of new features include:

- a. Steam Community in August 2007 that added a friends list, voice chat, text chat rooms, game lobbies, and community features such as user profiles and user groups.³⁷⁴
- b. Steam Cloud in November 2008 that allowed users to store application data online (including game save files), giving users a consistent experience across PCs.³⁷⁵
- c. Steam Workshop in October 2011 that gave users a central hub of player-created content and tools to publish, organize, and download that content into their games.³⁷⁶

208. Valve also made investments to improve existing user-facing features. For example, the Steam Chat update in July 2018 improved the Steam friends list, text chat, and voice chat functionalities. Similarly, after introducing In-Home Streaming in May 2014, which allowed users to play Steam games on devices in their homes (such as TVs) in addition to their PCs, Valve introduced the upgraded Remote Play and Remote Play Together in June and October 2019.³⁷⁷ These improvements enabled a user to play a multiplayer game through a shared screen with users on other devices (instead of requiring multiple players to play on the same device).³⁷⁸

209. The timing of these user-facing improvements suggests that Valve’s investments were in response to increased competition. For example, from 2011 to 2015, EA’s Origin platform, Ubisoft’s Uplay platform, and GOG’s Galaxy client were all launched.³⁷⁹ During this period, Valve added user-facing features at a faster rate than it had previously, introducing features like Steam Community Market, Steam Workshop, and Steam Big Picture.³⁸⁰ Equivalent features are mostly absent from these competitor platforms or were added years after Valve introduced them on Steam.³⁸¹ Furthermore, qualitative evidence suggests that some of Valve’s feature investments on Steam appear to have been made in response to features available on competitor platforms. For

³⁷³ Schwartz Report, ¶ 223, Footnote 620.

³⁷⁴ See Appendix Section 13.1.

³⁷⁵ See Appendix Section 13.1.

³⁷⁶ See Appendix Section 13.1.

³⁷⁷ See Appendix Section 13.1.

³⁷⁸ See Appendix Section 13.1.

³⁷⁹ Electronic Arts, “EA Launches Origin,” June 3, 2011, available at https://s22.q4cdn.com/894350492/files/doc_news/archive/582630.pdf, accessed on April 17, 2024; Mike Williams, “Ubisoft launches Uplay PC digital distribution platform,” *GamesIndustry.biz*, August 16, 2012, available at <https://www.gamesindustry.biz/ubisoft-launches-uplay-pc-digital-distribution-platform>, accessed on April 19, 2024; Cory Banks, “GOG.com announces Galaxy, DRM-free online gaming platform,” *PC Gamer*, June 5, 2014, available at <https://www.pcgamer.com/gog-com-announces-galaxy-drm-free-online-gaming-platform/>, accessed on April 19, 2024.

³⁸⁰ Exhibit 13.

³⁸¹ Exhibit 14 presents a comparison of feature availability on Steam and competitor platforms. For some features that are present on both Steam and other platforms, those features were added much later on other platforms or at lower quality. Note that Steam Big Picture is presented in Exhibit 14 as “console-like navigation and control.”

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example, in response to competition on chat features from Discord, Valve introduced Steam Chat, an upgrade to Steam’s chat features in July 2018, one month prior to the announcement of Discord’s game store.³⁸² Additionally, GOG and EA implemented refund policies for digital products on their platforms in 2013.³⁸³ Two years later, in 2015, Valve implemented refunds for all games purchased on Steam, increasing the quality of the Steam platform.³⁸⁴ Valve employees have also acknowledged increased investment in features following, for example, [REDACTED] decision not to release new titles on Steam.³⁸⁵

210. Valve’s innovations to improve user experience on Steam also benefit publishers because Steam is a two-sided platform. As a two-sided platform, Steam provides value to publishers by attracting a large, engaged set of users to whom publishers can market and sell their games, and Steam provides value to users by attracting publishers from which consumers can purchase games on the platform. That is, the outcomes for publishers on Steam are affected by the participation of users, and vice versa. These types of benefits are commonly referred to as “indirect network effects.”³⁸⁶ Therefore, either side of the platform can reap the benefits of innovation on the other side. As a result, Valve’s user-facing feature innovations discussed above benefited publishers as well.
211. To support his claim that “developers are dissatisfied with the quality of Steam’s platform,” Dr. Schwartz relies on select and unrepresentative evidence from Valve documents, unrepresentative and outdated small-sample surveys conducted in 2017 by game developer Lars Doucet, and mischaracterized deposition testimony from Chris

³⁸² Exhibit 13; Appendix Section 13.1; Sean Buckley, “Valve just launched Steam Chat, a built-in answer to Discord,” *CNET*, July 24, 2018, available at <https://www.cnet.com/tech/gaming/valve-just-launched-steam-chat-a-built-in-answer-to-discord/>, accessed on May 11, 2024 (“There was a time when Steam’s built-in chat platform was one of the easiest ways to talk to your friends about games. It had voice chat and was natively integrated into the biggest PC gaming distribution service. It did exactly what gamers needed of it, but little else. But online chat communities evolved, and Steam’s default chat client didn’t. Soon, Discord ate Valve’s lunch. Now the PC gaming platform is striking back. On Tuesday, Valve launched Steam Chat, a major overhaul of the platform’s built-in chat client. And -- surprise! -- it’s a lot like Discord.”); Christopher Livingston, “The Discord Store is a carefully curated shop, but could use a few more features,” *PC Gamer*, October 19, 2018, available at <https://www.pcgamer.com/the-discord-store-is-a-carefully-curated-shop-but-could-use-a-few-more-features/>, accessed on April 19, 2024 (“Discord opened its own game store this week[.]”).

³⁸³ Daniel Nye Griffiths, “Good Guy GOG? Online Games Merchant Offers Money-Back Guarantee,” *Forbes*, December 10, 2013, available at <https://www.forbes.com/sites/danielnyegriffiths/2013/12/10/good-guy-gog-online-games-merchant-offers-money-back-guarantee/>, accessed on April 19, 2024 (“From now on, GOG.com has announced, it will attempt to fix any non-functioning game it sells and, if a fix cannot be found, it will offer a full refund.”); Kyle Orland, “Valve begins offering refunds for all Steam games,” *Ars Technica*, June 2, 2015, available at <https://arstechnica.com/gaming/2015/06/valve-begins-offering-refunds-for-all-steam-games>, accessed on April 19, 2024 (“EA started offering a seven-day refund window for games it published on its Origin service nearly two years ago.”).

³⁸⁴ Kyle Orland, “Valve begins offering refunds for all Steam games,” *Ars Technica*, June 2, 2015, available at <https://arstechnica.com/gaming/2015/06/valve-begins-offering-refunds-for-all-steam-games>, accessed on April 19, 2024 (“Valve has announced a new refund policy that applies to every game on the service.”).

³⁸⁵ Email chain from Kristian Miller to Dario Casali and Connor Malone, “RE: [REDACTED] August 10, 2018, VALVE_ANT_0818222–223 at 222 (“We’ve spent some time discussing and there’s a good chance that the next [REDACTED] that is currently in pre-order on Steam will be the last title we ship for [REDACTED] for a while.”); Miller Deposition, p. 91 (“Q. ... Do you recall if -- if Valve, in fact, did that, invested more time and resources into high-impact features for Steam? A. It did. Q. And what were those high-impact features? A. There were a broad number of them. As I mentioned before, some examples would include our improvements to communication and exhibition features as well as discoverability on the storefront.”).

³⁸⁶ Tim Stobierski, “What are network effects?” *Harvard Business School*, November 12, 2020, available at <https://online.hbs.edu/blog/post/what-are-network-effects>, accessed on May 11, 2024 (“Indirect network effects, on the other hand, occur when a platform or service depends on two or more user groups, such as producers and consumers, buyers and sellers, or users and developers. As more people from one group join the platform, the other group receives a greater value amount.”).

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Boyd regarding Valve’s customer support quality.³⁸⁷ Dr. Schwartz acknowledges the serious limitations of the surveys he relies on, noting that “The survey is not a representative sample, favoring developers who are English speaking, well-connected, active on social media, know Lars Doucet, and are independent or small rather than AAA publishers, and those developers that are from North America, the UK, or Europe.”³⁸⁸

212. Dr. Schwartz ignores Valve’s response to the issues raised in these surveys. In particular, Dr. Schwartz only references an out-of-date 2017 survey at the very beginning of the proposed class period, and ignores a survey from the same author, conducted in the next year, explaining how Valve continually improves Steam.³⁸⁹ In an article detailing the most recent (2018) iteration of the surveys cited, Mr. Doucet provides an accounting of Valve’s responses to issues raised in both the surveys cited by Dr. Schwartz and a similar survey conducted in 2016. Mr. Doucet notes that Valve resolved 55–60 percent of the issues pointed out by developers in the prior surveys.³⁹⁰
213. In contrast to the limited evidence reviewed by Dr. Schwartz, I document Valve’s extensive investments in Steam features directly benefiting publishers in a more comprehensive fashion. Exhibit 13 shows Valve’s history of continual investment in publisher-facing features on Steam (i.e., items highlighted in green). For example, in May 2008 Valve launched the Steamworks Software Development Kit (“SDK”), which “provide[d] a range of features ... designed to help ship [an] application or game on Steam in an efficient manner.”³⁹¹ The Steamworks SDK gives publishers the tools to implement Steam features in their games, including Workshop features.³⁹² Moreover, Valve has updated the Steamworks SDK at least 59 times since its launch.³⁹³

³⁸⁷ Schwartz Report, ¶¶ 223–231, Footnotes 620, 624, 629, 632, 633. For example, Dr. Schwartz cites to an internal Valve email from October 2018 documenting takeaways from Valve meetings with a handful of indie developers as evidence of publishers’ dissatisfaction. See Schwartz Report, ¶ 224, Footnote 624; Email chain from Alden Kroll to Jane Ng et al., “Trip Notes: Boston developer meet-up,” October 5, 2018, VALVE_ANT_0054709–714. Dr. Schwartz claims that Mr. Boyd acknowledged in his deposition that “Valve has a reputation for ‘bad support,’” but fails to acknowledge in the text of his report that Mr. Boyd was referring to the 2017 interview he cites. Dr. Schwartz fails to consider deposition testimony from Erik Johnson that details sweeping customer support improvements implemented by Valve following the 2017 interview. See Schwartz Report, ¶ 226; Deposition of Erik Johnson (Valve), September 26, 2023 (“Johnson Deposition”), pp. 227–229 (“Q. Do you recall making public statements about Valve needing to toss its busted customer service program in the incinerator and start over? A. I don’t remember saying that, but I remember thinking that at one point, for sure ... And that was the state we were in where our customer support actually was bad ... And I went and looked in customer support tickets and was pretty horrified at what I saw ...”).

And now today I think, you know, we’re on the order of [REDACTED] customer support reps, and I think our reputation actually is quite good.”).

³⁸⁸ Schwartz Report, Footnote 632.

³⁸⁹ Schwartz Report, ¶ 227, Footnotes 632, 633.

³⁹⁰ Lars Doucet, “Operation Tell Valve All the Things, 3.0,” *Fortress of Doors*, December 10, 2018, available at <https://www.fortressofdoors.com/operation-tell-valve-all-the-things-3-0/>, accessed on May 6, 2024 (“I know for a fact that Valve reads these reports, and even responds to them. Of the 19 issues we raised in the past two surveys, we got a resolution for 55–60% of them, depending on how you figure.”). This article also contains the results of another survey of developer attitudes towards Steam conducted by Lars Doucet. However, Lars Doucet acknowledges that “[t]his survey is neither scientific nor comprehensive.”

³⁹¹ Steamworks, “Steamworks SDK,” available at <https://partner.steamgames.com/doc/sdk>, accessed on April 19, 2024.

³⁹² Kyle Kukshetel, “A Gentle Introduction to Steamworks,” *Game Developer*, August 17, 2017, available at <https://www.gamedeveloper.com/business/a-gentle-introduction-to-steamworks>, accessed on April 19, 2024 (“Steamworks is ... an SDK Valve provides that lets you interoperate with everything *else* Steam provides like Workshop, Leaderboards, Servers, Achievements, etc.”).

³⁹³ Steamworks, “SDK Releases,” available at <https://partner.steamgames.com/downloads/list>, accessed on April 29, 2024.

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Furthermore, Valve invested in several new developer-facing features on Steam, including:

- a. Discount self-configuration tools in February 2014 that allowed publishers to configure their own discounts for customer sale periods and opt in to upcoming week-long sales.³⁹⁴
 - b. Steam Playtest in April 2021 that allowed developers to set up and run tests of their games on Steam with users for free, without having to manage Steam keys or external mailing lists.³⁹⁵
214. Finally, Valve made many investments in Steam to improve the experience of users *and* publishers (i.e., items highlighted in both orange and green in Exhibit 13). For example, in August 2012, Valve introduced Game Hubs, which provide users with a centralized location to discuss and share content about their favorite games and which provide publishers with a place to distribute news and updates about their games.³⁹⁶ Valve also made multiple updates to the Steam Store aimed at enhancing game discovery, such as Steam Store Wishlists in April 2010, Steam Wallet in September 2010, and Steam Bundles in June 2016, and Valve implemented a user review system to help users gather information about the quality of the games in November 2013.³⁹⁷ Enhancements to game discovery help users find games they are interested in playing and help publishers reach users who are interested in playing their games.
215. Valve’s record of innovation and investment in Steam is particularly evident during the Class Period. Each year since at least 2018, Valve has detailed improvements made to Steam in “Year in Review” and “Annual Summary” news posts made on the Steamworks Development News Hub on Steam.³⁹⁸ In addition to documenting many of the features discussed in Exhibit 13 above, these posts chronicle many other improvements and innovations Valve has made on Steam during the proposed class period, including an updated Big Picture mode, Steam Store discoverability improvements, and Steam infrastructure improvements, among others.³⁹⁹

³⁹⁴ Exhibit 13 and Appendix Section 13.1.

³⁹⁵ Exhibit 13 and Appendix Section 13.1.

³⁹⁶ Exhibit 13 and Appendix Section 13.1.

³⁹⁷ Exhibit 13 and Appendix Section 13.1.

³⁹⁸ Steam, “Steam Annual Summary: 2023,” February 19, 2024, available at <https://store.steampowered.com/news/group/4145017/view/4031353003322171823>, accessed on May 6, 2024; Steam, “Steam Year In Review 2022,” February 16, 2023, available at <https://store.steampowered.com/news/group/4145017/view/3677786186779762807>, accessed on May 6, 2024; Steam, “Steam – 2021 Year in Review,” March 8, 2022, available at <https://store.steampowered.com/news/group/4145017/view/3133946090937137590>, accessed on May 6, 2024; Steam, “Steam – 2020 Year in Review,” January 13, 2021, available at <https://store.steampowered.com/news/group/4145017/view/2961646623386540826>, accessed on May 6, 2024; Steam, “Steam – 2019 Year in Review,” February 5, 2020, available at <https://store.steampowered.com/news/group/4145017/view/1697229969004830849>, accessed on May 6, 2024; Steam, “Steam – 2018 Year in Review,” January 14, 2019, available at <https://steamcommunity.com/groups/steamworks/announcements/detail/1697194621363928453>, accessed on May 6, 2024.

³⁹⁹ Steam, “Steam Annual Summary: 2023,” February 19, 2024, available at <https://store.steampowered.com/news/group/4145017/view/4031353003322171823>, accessed on May 6, 2024 (“Alongside Desktop and Overlay improvements, we launched the new Steam Big Picture Mode in February 2023.”); Steam, “Steam – 2019 Year in Review,” available at <https://store.steampowered.com/news/group/4145017/view/1697229969004830849>, accessed on May 6, 2024 (“The year’s first update in January made it easier for users to browse DLC for their favorite games by tags, top

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216. This stream of continued innovation is reflected in testimony from Valve witnesses who noted Valve’s investments in tools that make it easier for publishers to sell their games on Steam, improvements to Steam’s customer service, and the development of “high-impact” features for the platform.⁴⁰⁰ Valve witnesses also noted in deposition testimony that Valve’s history of innovation made Steam a higher-quality platform than its competitors, which I discuss further below.⁴⁰¹

5.1.2. Steam is a higher-quality platform than competitor platforms

217. Competitors’ platforms lack many of the features present on Steam. Steam’s higher-quality offerings contradict Plaintiffs’ allegation that “Valve’s anticompetitive conduct allows Steam to remain dominant without reference to its quality” and reinforce the fact that Steam’s quality-adjusted revenue share decreased over time relative to the quality-adjusted revenue shares of competing platforms.⁴⁰²
218. Exhibit 14 summarizes my research on Steam’s features as compared to competitors. The rows present a sample of features from four major categories (explained below), and the columns present the set of PC platforms considered by Dr. Schwartz.⁴⁰³ Each cell denotes whether a feature is present (“Yes”) or not present (denoted with a red “x”) and offers additional context where there are either a handful of related features or where a clear quality disparity exists between a feature’s implementation on Steam and on competing platforms.
219. To identify the categories of features I include in Exhibit 14, I conducted a comprehensive review of articles from industry sources. These articles either discuss

sellers, new releases, and developer-authored lists ... Another new initiative in 2019 highlighted the Top Steam Releases each month ... We also worked on finding new ways to surface recommendations to users. For example, during the Winter Sale, we experimented with sending customized emails that recommended five games selected for that user by our machine-learning recommendation engine.”).

⁴⁰⁰ Deposition of Jason Ruymen (Valve), September 19, 2023, pp. 22–26 (“Q. Could you describe how the process of shipping a game on Steam now is different than it was [in 2009]? ... A. So now for a title to ship, we have made a lot of the tools that used to only be available or worked inside the Valve offices, those can work outside of Valve. So partners have tools where they can package up their games themselves. They have tools where if it does require registry keys or redistributables to be installed, we have either made that easy where they can check a box for what those are or made a simple script where they can write those values. We have streamlined how store pages can be created by the partner and updated. So the process is much -- much easier for most partners.”); Johnson Deposition, pp. 227–229 (“Q. Do you recall making public statements about Valve needing to toss its busted customer service program in the incinerator and start over? A. I don’t remember saying that, but I remember thinking that at one point, for sure ... And that was the state we were in where our customer support actually was bad ... And I went and looked in customer support tickets and was pretty horrified at what I saw ... [REDACTED]”).

[REDACTED]. And now today I think, you know, we’re on the order of [REDACTED] customer support reps, and I think our reputation actually is quite good.”); Miller Deposition, p. 91 (“Q. ... Do you recall if -- if Valve, in fact, did that, invested more time and resources into high-impact features on Steam? A. It did. Q. And what were those high-impact features? A. There were a broad number of them. As I mentioned before, some examples would include our improvements to communication and exhibition features as well as discoverability on the storefront.”).

⁴⁰¹ Johnson Deposition, pp. 249–250 (“Q. Do you know the reasons for its exit? A. ... They couldn’t -- they couldn’t be valuable to customers in the way that we are by building features for 20 years, so they were going to also take Epic’s approach of being valuable to developers by changing the royalty rate, but not having as many features. And I think they looked at what Epic was offering and saying, we -- we don’t -- we’re not really interested in the business at that level.”).

⁴⁰² Complaint, ¶ 58.

⁴⁰³ I exclude non-gameplay platforms mentioned by Dr. Schwartz such as Humble Bundle and Green Man Gaming as user and publisher interactions with these platforms is limited, and I exclude game-specific first-party platforms mentioned by Dr. Schwartz such as *Minecraft* and *Roblox* as relevant features for those platforms are likely to be specific to the single games they distribute. I also exclude Twitch.tv from this comparison, as I could not find readily available public information on the features of Twitch’s former game distribution platform.

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advice to publishers for distributing their games on PC platforms (e.g., recommending that publishers take advantage of particular features to increase sales) or compare PC platforms across a set of features and/or feature categories.⁴⁰⁴ From this review, I identified four categories of features that consistently appear in industry sources: (a) **social and multiplayer features** that facilitate interactions between users, (b) **compatibility features** that make the platform easier to use with a variety of other devices, (c) **discovery and marketing features** that both help users find news and information about games they may enjoy and help publishers market and sell their games on the platform, and (d) **customization features** that help users to customize their presence on the platform and allow them to customize their games and gameplay experiences.

220. Then I then selected a sample of features from these categories across which to compare Steam and competing platforms. I conducted research about Steam and competing platforms to ascertain the availability and quality of these features.⁴⁰⁵
221. I find that Steam is richer in features than competing platforms along the feature categories presented in Exhibit 14. In fact, some features are offered *only* on Steam, such as console-like navigation and control (e.g., Steam Big Picture mode), non-native controller support (called “Steam Input” that allows players to use controllers not compatible with Windows, such as PlayStation 4 or Nintendo Switch controllers, and to browse games by supported controllers), and a Linux compatibility layer (that allows users to play many Windows-only games on the Linux operating system).⁴⁰⁶ Furthermore, Steam’s features that are common to its competitors are often of higher quality on Steam. For example, EGS offers user ratings under the User Reviews feature but does not have the functionality for users to leave text reviews.⁴⁰⁷ GOG has its

⁴⁰⁴ Appendix Section 13.2.

⁴⁰⁵ Where I was able to determine that a feature was ever available, that feature is treated as available in this comparison regardless of whether it still is available. For example, in March 2021, EGS removed “Whispers,” a feature providing text chat functionality, in preparation for a larger update to social features in the same year. As of October 9, 2023, I have not found evidence that this feature has been added back to EGS, but I still consider it as available in my analysis. See Epic Games, “Epic Games Store Social Update,” March 17, 2021, available at <https://store.epicgames.com/en-US/news/epic-games-store-social-update>, accessed on April 19, 2024 (“Whispers haven’t been wildly used, so this features is going into the vault for now, but we’re hopeful to bring it back later with improved functionality for messaging your friends.”).

⁴⁰⁶ Steam, “Big Picture,” available at <https://store.steampowered.com/bigpicture>, accessed on April 19, 2024; Steamworks, “Getting Started for Players,” available at https://partner.steamgames.com/doc/features/steam_controller/getting_started_for_players, accessed on April 19, 2024 (“With Big Picture, we’ve reformatted Steam for use with your TV and game controller, so you can enjoy your Steam games from the comfort of your couch.”); Steam, “New! Find Great Games To Play With DualShock and DualSense Controllers,” November 20, 2023, available at <https://store.steampowered.com/news/app/593110/view/3823053915988527061>, accessed on April 19, 2024 (“Today’s Steam update expands on that foundation to help the millions of players with PlayStation’s DualShock and DualSense controllers easily find games to play with those devices ... We have upgraded the Controller-Friendly hub on Steam to make it easier to explore by controller type. By default Steam will set a filter based on the controller we’ve seen you play with recently, but you can also manually select any of the major controller models to adjust the filters ... We also encourage developers to use Steam Input API, which supports nearly all Xbox, PlayStation, and Switch controllers.”).

⁴⁰⁷ Exhibit 14. An examination of EGS’s feature evolution and how that evolution compares to feature availability on Steam is helpful in understanding the nature of quality competition between Steam and its competitors. EGS launched in December 2018. See Epic Games, “The Epic Games store is now live,” December 6, 2018, available at <https://store.epicgames.com/en-US/news/the-epic-games-store-is-now-live>, accessed on December 7, 2023 (“The Epic Games store is now open”). At the time, EGS lacked a number of seemingly standard features that were present on Steam at the same time. For example, EGS did not support cloud saves until July 2019. See Andy Chalk, “The Epic Store is beginning to support cloud saves,” *PC Gamer*, July 25, 2019, available at <https://www.pcgamer.com/the-epic-store-is-beginning-to-support-cloud-saves/>, accessed on April 19, 2024 (“Cloud saves have been planned for the Epic Store for a while. The functionality was originally scheduled to arrive by mid-June,

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Friends and Chat functionality but does not support voice chat between users.⁴⁰⁸ I found few instances where features offered by Valve’s competitors are higher quality than Steam’s.⁴⁰⁹

222. My primary conclusions from this exhibit are consistent with the conclusions of the articles I reviewed, which often describe Steam’s superior, feature-rich offering as compared to rivals. For example, in January 2024, PC Gamer compared PC platforms including EGS, GOG, the Microsoft Store, and others to Steam and stated:⁴¹⁰

“Steam still puts the rest to shame ... The biggest and still the best, Steam offers both the widest range of games and the best suite of features of any of the available launchers ... [S]eeing how much others struggle to match Steam’s functionality and breadth of choice certainly brings home what a remarkable thing Valve has achieved.”

223. As another example, in July 2023, PCMag compared EGS, which launched in 2018, to Steam and concluded:⁴¹¹

“The Epic Games Store can’t overcome the gulf in premium features Steam has built up throughout the years, especially since it has slowly taken months for Epic to implement basic features it arguably should have had from the start. Is the Epic Games Store a serviceable store for buying a growing library of DRM-free PC games? Sure. Is it a helpful resource for Unreal Engine developers? Absolutely. But is it epic? Not quite.”

but was pushed back to July on the EGS development roadmap back in May.”). Moreover, wishlists did not arrive on EGS until March 2020, and achievements and mod support did not arrive on EGS until July 2020. See Epic Games, “Wishlists are here!” March 10, 2020, available at <https://store.epicgames.com/en-US/news/wishlists-are-here>, accessed on April 19, 2024 (“We just added the first version of Wishlists to the Epic Games Store!”); Wesley LeBlanc, “Epic Games Store Finally Gets Achievements and Mod Support,” *IGN*, July 30, 2020, available at <https://www.ign.com/articles/epic-games-store-finally-gets-achievements-and-mod-support>, accessed on April 19, 2024 (“The Epic Games Store is finally getting achievements and mod support.”). User reviews did not exist on EGS until June 2022, and even then, the user reviews were limited to scores and multi-choice questions rather than the full text reviews users can leave on Steam. See Kyle Orland, “The best games on the Epic Games Store, as picked by players,” *Ars Technica*, June 28, 2022, available at <https://arstechnica.com/gaming/2022/06/epic-games-store-user-reviews-arrive-3-years-late-still-feel-half-baked/>, accessed on April 19, 2024 (“Last week, Epic finally added a user review system to its PC Game Store, nearly 3.5 years after the service’s initial launch ... On Steam, users can add text to their thumbs-up/thumbs-down reviews, highlighting which specific elements they did or didn’t like ... With EGS, on the other hand, player-reviewers answer pre-populated survey questions about specific elements of the game, which are then distilled into descriptors that are listed alongside the user review score. Those descriptors are (so far) limited to extremely generic (and universally positive) sentiments about the game: ‘amazing storytelling’; ‘diverse characters’; ‘obsessive gameplay’; ‘great boss battles’; etc.”); Jordan Minor, “Epic Games Store Review,” *PCMag*, July 20, 2023, available at <https://www.pcmag.com/reviews/epic-games-store-for-pc>, accessed on October 23, 2023 (“Basic features you take for granted don’t appear here ... There’s little sense of community since there are no user reviews to read or curators to follow.”); Exhibit 14. By the time all these features were ultimately added to EGS, Steam users had been enjoying them for nearly a decade or more. Steam Cloud was released in November 2008, Steam Store Wishlists were released in April 2010, Steam Achievements were released in November 2007, Steam Workshop (mod support) was released in October 2011, and Steam’s customer review system was released in November 2013. See Exhibit 13. Additionally, in an X post made in January 2019, Tim Sweeney, Epic Games’ CEO acknowledged EGS’s relative lack of features on Twitter, stating that “The Epic Games store has the ‘fewer features’ feature, which Steam lacks!” See Tim Sweeney, “The Epic Games store has the ‘fewer features’ feature, which Steam lacks!” X, January 22, 2019, available at <https://twitter.com/TimSweeneyEpic/status/1087803305802244097>, accessed on April 19, 2024.

⁴⁰⁸ See Exhibit 14.

⁴⁰⁹ Among the features presented in Exhibit 14, GOG offers more generous refund terms than Steam. See Appendix Section 13.2.

⁴¹⁰ Robin Valentine, “PC gaming’s many launchers, reviewed for 2024: Steam still puts the rest to shame,” *PC Gamer*, January 30, 2024, available at <https://www.pcgamer.com/pc-gamings-many-launchers-reviewed-for-2024-steam-still-puts-the-rest-to-shame/>, accessed on April 11, 2024.

⁴¹¹ Jordan Minor, “Epic Games Store Review,” *PCMag*, July 20, 2023, available at <https://www.pcmag.com/reviews/epic-games-store-for-pc>, accessed on October 23, 2023.

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Exhibit 14**Steam has higher-quality features than other distribution channels**

	Steam	Battle.net	Bethesda.net[1]	Discord[1]	EA App	EA Origin[1]	Epic Games Store	GOG	Itch.io	Microsoft Store	Rockstar Launcher	Ubisoft Connect
Social and multiplayer features												
Friends and chat	Friends List/Text Chat/Voice Chat	Friends List/Text Chat/Voice Chat	Friends List	Friends List/Text Chat/Voice Chat	Friends List/Text Chat	Friends List/Text Chat/Voice Chat	Friends List/Limited Text Chat	Friends List/Text Chat	×	Friends List/Text Chat/Voice Chat	Friends List/Text Chat	Friends List/Text Chat
Gifting and library sharing	Gifting/Lib. Sharing	Gifting	×	Gifting	×	Gifting	×	Gifting	Gifting	Gifting/Lib. Sharing	×	Library Sharing
Anti-cheating tools	Yes	×	×	×	Yes	×	Yes	×	×	Yes	×	×
Community Marketplace	Yes	×	×	×	×	×	×	×	×	×	×	×
Compatibility features												
Console-like navigation and control	Yes	×	×	×	×	×	×	×	×	×	×	×
Non-native controller support	Yes	×	×	×	×	×	×	×	×	×	×	×
Linux compatibility layer	Yes	×	×	×	×	×	×	×	×	×	×	×
Discovery and marketing features												
Self-Publishing	Yes	×	×	Yes	×	×	Yes	Yes, inferior	Yes	Yes	×	×
Game Hubs	Yes	Yes	Yes	Yes	×	×	×	Yes	Yes	×	×	Yes
Early Access	Yes	×	×	Yes	×	×	Yes	Yes	Yes	Yes	×	×
Store wishlists	Yes	×	Yes	×	×	Yes	Yes	Yes	Yes	Yes	×	Yes
User reviews	Yes	×	×	×	×	×	Yes, but no text reviews	Yes	Yes	Yes	×	×
Game returns and refunds	Yes	Yes	×	Yes	Yes	Yes, inferior	Yes	Yes, superior	Yes, inferior	Yes	Yes	Yes
Customization features												
Achievements	Yes	×	×	Yes	×	Yes	Yes	Yes	×	Yes	Yes	Yes
User profile customization	Yes	Yes, inferior	×	Yes	Yes, inferior	Yes, inferior	×	Yes	Yes	Yes	Yes	Yes, inferior
Workshop (mods)	Yes	Yes, inferior	Yes	×	×	×	Yes	×	×	×	×	×

Source: Appendix Section 13.2

Note: For some platform features, I was unable to find affirmative evidence of availability of the feature for a given platform. As such, these features are treated as not present on the relevant platform.

[1] These platforms are either inactive or no longer distribute PC games.

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224. Additionally, PC Gamer compared Discord’s gaming store (which operated from 2018 to 2019) to Steam and stated:⁴¹²

“As a storefront, the Discord Store has a cleaner presentation than Steam, although that can be chalked up mostly to the limited selection and a general lack of features. There are no user reviews, so you can’t see what other Discord members think of the games, just a Metacritic score (most games available are scored above 70).”

225. Similar articles note that GOG is “not as feature-rich as Steam” and has “a long, long way to go before it comes anything close to Steam,” that the Microsoft Store “looks more beautiful, but Steam is more functional and has better gaming-centric features,” and that the EA App (the successor to EA’s Origin platform) “is bland, featureless, and wholly forgettable.”⁴¹³

226. Takeaways from these articles are also echoed in the deposition testimony from third parties in this matter. [REDACTED] testified on behalf of [REDACTED] that [REDACTED]
[REDACTED]
[REDACTED] Similarly, [REDACTED]
[REDACTED], testified that, based on his industry experience and knowledge, users rely on Steam reviews even when shopping elsewhere for games.⁴¹⁵ Additionally, [REDACTED], a former Dark Catt employee, testified that features similar to Steam’s Community Hubs were “woefully absent” on Viveport where Dark Catt currently sells its only title, *Djinni & Thaco*.⁴¹⁶

227. Existing evidence also indicates that users prefer Steam over other platforms. [REDACTED]
[REDACTED]

⁴¹² Christopher Livingston, “The Discord Store is a carefully curated shop, but could use a few more features,” *PC Gamer*, October 19, 2018, available at <https://www.pcgamer.com/the-discord-store-is-a-carefully-curated-shop-but-could-use-a-few-more-features/>, accessed on April 19, 2024. Discord replaced its storefront in 2019 with the Nitro games catalogue, a multi-game subscription service, and began requiring direct game purchases to be made through developers’ own Discord servers. See Nelly, “Empowering Developers with Community and Commerce,” *Medium*, March 14, 2019, available at <https://medium.com/discord-engineering/empowering-developers-with-community-and-commerce-68d9c0712662>, accessed on May 6, 2024.

⁴¹³ Bill Thomas, “Steam vs GOG vs GreenManGaming: which is best for PC gamers?” *TechRadar*, June 12, 2018, available at <https://www.techradar.com/news/steam-vs-gog-vs-greenmangaming-which-is-best-for-pc-gamers>, accessed on October 23, 2023; Dave Thier, “Could GOG Galaxy Be The First Real Competition For Steam?” *Forbes*, May 5, 2015, available at <https://www.forbes.com/sites/davidthier/2015/05/05/could-gog-galaxy-be-the-first-real-competition-for-steam/>, accessed on April 19, 2024; Gaurav Bidasaria, “Microsoft Store vs Steam: What You Need to Know,” *TechWiser*, March 19, 2023, available at <https://techwiser.com/microsoft-store-vs-steam-comparison/>, accessed on April 19, 2024; Alice O’Connor, “The new EA app replacing Origin is still a launcher you’ll only ever use when forced to,” *Rock Paper Shotgun*, October 7, 2022, available at <https://www.rockpapershotgun.com/the-new-ea-app-replacing-origin-is-still-a-launcher-youll-only-ever-use-when-forced-to>, accessed on April 19, 2024.

⁴¹⁴ Deposition of [REDACTED], p. 39; Deposition of [REDACTED], p. 25.

⁴¹⁵ Deposition of [REDACTED], p. 34 (“Q. ... Are you familiar with whether users would look at Steam reviews, even if they’re shopping on Epic or somewhere else to buy a game? ... A. I believe they would. Q. [] And is that belief informed by experience and knowledge because you’re in the industry? ... A. Yes. Yes, it is, and also it is widely reported on in the press as well.”).

⁴¹⁶ Deposition of [REDACTED], p. 61; Deposition of John Robb (Dark Catt), November 28, 2023, p. 116 (“Q. And you testified earlier that you can -- a person can buy the Djinni & Thaco game at the HTC VIVE store. Is that correct? A. That’s correct.”).

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228. Differences in available features across platforms can lead to different experiences for consumers and publishers of the same game across platforms. To the extent a given game uses features available on one platform and not another, differences in platform quality can affect the quality of games played on the platform. For example, *Killing Floor 2* is sold on both Steam and EGS.⁴¹⁸ However, consumers buying the game on Steam are able to buy and sell virtual in-game items on the Steam Community Market, while consumers buying the game on EGS are not able to transact these items as EGS lacks an equivalent feature.⁴¹⁹ In Section 5.2 below, I discuss the different ways in which consumers and publishers benefit from Steam features.

229. In sum, Valve made significant improvements to the experience of users and publishers on Steam over time, increasing the value of the platform to each of these groups. As a result, Valve offers a superior product today at a similar or lower revenue share rate than in the past. Therefore, Valve’s quality-adjusted rates are lower now than in the past. These improvements also lowered Valve’s quality-adjusted revenue share rate relative to its competitors, which have failed to match Steam’s quality. Furthermore (as discussed more in the next section), the extent to which a publisher’s quality-adjusted revenue share is lower depends upon how much that publisher values Steam’s features.

5.2. Publishers vary in the benefits they derive from Steam features and would not be impacted in a common fashion (if at all) by the alleged conduct

230. In this section I describe how publishers differ in the benefits they receive from features on Steam. Contrary to Dr. Schwartz’s implicit assumption that publishers would benefit in a common way, my analysis indicates that publishers are likely to benefit differently from an allegedly richer set of features in the but-for world due to a variety of factors. As a result, individualized inquiry is necessary to assess each publisher’s quality-adjusted revenue share, both in the actual world and in Dr. Schwartz’s but-for world, as Dr. Schwartz’s deposition testimony suggests.⁴²⁰ It is not possible to analyze antitrust impact with common proof.

⁴¹⁷ [REDACTED]

⁴¹⁸ Steam, “Killing Floor 2,” available at https://store.steampowered.com/app/232090/Killing_Floor_2/, accessed on May 12, 2024; Epic Games, “Killing Floor 2,” available at <https://store.epicgames.com/en-US/p/killing-floor-2>, accessed on May 11, 2024.

⁴¹⁹ See Exhibit 14; Steam, “Community Market,” available at <https://steamcommunity.com/market/>, accessed on May 1, 2024.

⁴²⁰ Schwartz Deposition, pp. 249–250 (“13 Q. [Doesn’t Valve] also enhance the services with new services and better services? ... [A.] ... Steam, as I understand it, has from time to time added features to the platform. Whether those features are of value to a particular consumer, whether they are of value to a particular developer, whether they enhance the experience of the user in connection with their consumption of the game or improve the experience for the developer is unclear. They’re certainly an assertion that they provide value, but there’s no systematic evidence of the value that they apply or that they bring.”).

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231. I use the limited available information on publishers' usage of, and benefits received from, Steam's current features to illustrate what individualized inquiry may reveal about publishers' varying potential benefits—and quality-adjusted revenue shares—from improved features in Dr. Schwartz's alleged but-for world. I discuss the extent to which publishers vary in the benefits they receive from Steam's user-facing features (Section 5.2.1), publisher-facing features (Section 5.2.2), search and discoverability features (Section 5.2.3), and features that enable publishers to reach a wider international audience (Section 5.2.4).

5.2.1. User-facing features

232. As discussed in the prior section, Steam developed many features that attract users, and these features benefit publishers on Steam due to the two-sided nature of the platform. These features range from social features, which support the ability to connect with friends while using the platform, to quality-of-life features that provide players with a range of options for how to play their games. Because publishers can attract different audiences, and because some types of games will be more suited for some features than others, the value of these features—and any improvements to them—will vary by publisher depending on the types of games they publish.

233. For example, consider social features, which include the Steam Friends List, voice and text chat, and Remote Play Together. Steam Friends List allows users to add and manage a list of other users they consider friends and to send instant messages and chats.⁴²¹ Steam users can then voice and text chat with other Steam users on their friends list.⁴²² Remote Play Together is a multiplayer feature that allows users to play a multiplayer game through a shared screen with users on other devices (instead of requiring multiple players to play on the same device).⁴²³ As discussed in Section 5.1 above, the Steam Friends List and the voice and text chat capabilities are more comprehensive and superior to similar features offered by most, if not all, gaming platforms. Remote Play Together is a feature that, as of its release on Steam, was a long way off from being available on Steam's competitors' platforms.⁴²⁴ All of these features

⁴²¹ Steam Support, "Steam Friends & Chat," available at <https://help.steampowered.com/en/faqs/view/595C-42F4-3B66-E02F>, accessed on April 19, 2024 ("Your friends list allows you to quickly access and manage your friends on Steam. You can access your friends list directly from your favorite web browser or from the Friends & Chat interface in the lower right corner of your Steam client.").

⁴²² Steam Support, "Steam Friends & Chat," available at <https://help.steampowered.com/en/faqs/view/595C-42F4-3B66-E02F>, accessed on April 19, 2024 ("Group chats allow you to open chat rooms with more than one friend. Once you've created a group chat, you can save it for future use, along with access to special settings relative to that group ... Starting a voice chat with a friend is as simple as right-clicking their name in your friends list and selecting 'Start Voice Chat'. You can also start a voice chat in the lower right corner of any open chat window by clicking the microphone icon.").

⁴²³ Steam, "Remote Play," available at <https://store.steampowered.com/remoteplay>, accessed on April 19, 2024 ("Instantly share your Steam local multi-player games with friends over the internet, for free."); Matt Purslow, "Steam Remote Play Together Games No Longer Need the Second Player to Have a Steam Account," *IGN*, March 24, 2021, available at <https://www.ign.com/articles/steam-remote-play-together-games-no-longer-need-the-second-player-to-have-a-steam-account>, accessed on May 11, 2024 ("Since the stream sent to friends is on the host's screen, the system is designed for shared/split-screen games. Essentially, it turns couch co-op games into online games.").

⁴²⁴ Thomas Bardwell, "Steam 'Remote Play' Genius Cuts Deep in Another Blow to Epic Store," *CCN*, September 23, 2020, available at <https://www.ccn.com/steam-remote-play-together-blow-epic-store/>, accessed on April 19, 2024 ("In comparison, the Epic Games Store struggles to implement essential features such as shopping basket and pre-loading functionality, leading to speculation that similar online local-multiplayer technology is a long way off for Epic's platform."); Deposition of [REDACTED] (Wolfire), [REDACTED], pp. 248–249 ("Q. Okay. Are there other gaming

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make it easier or more enjoyable for users to play video games with other users on Steam. The features thereby create and enhance “direct network effects” (i.e., the benefit to a user increases as more users participate) that can be valuable to publishers with games where interactions among users is important.⁴²⁵

234. Multiplayer games rely on direct network effects among users, and therefore publishers of multiplayer games may derive more benefit from Steam features that enhance those direct network effects.⁴²⁶ For example, Remote Play Together allows users to play multiplayer games over the internet with other users, even for games that do not have online multiplayer options. Plaintiff Wolfire’s title *Overgrowth* offers local multiplayer (i.e., play on a shared screen offline) but does not offer online multiplayer options.⁴²⁷ Remote Play Together enables users to take advantage of *Overgrowth*’s local multiplayer functionality over the internet, improving the experience of the title’s users.⁴²⁸ By contrast, publishers of single-player games may derive less benefit from these Steam features. Although consumers who play single-player games may still interact with other users through these features, they do not need to do so to enjoy a complete game experience. As a result, these features may increase the value of multiplayer games to a greater degree than single-player games. Depending on the types of games they publish, publishers may vary in the benefits they receive from Steam’s social features, their quality-adjusted revenue shares, and how their quality-adjusted revenue shares may change in Dr. Schwartz’s alleged but-for world.
235. As another example, Steam also has several quality-of-life features related to game controllers that can enhance a user’s experience. These features include Steam’s Big Picture and non-native controller support. As discussed in Section 5.1 above, no other PC platform offers features similar to Steam’s Big Picture, which allows console-like control and navigation with a controller, and non-native controller support (Steam Input), which allows users to use non-Windows compatible controllers (e.g., PlayStation 4 or Nintendo Switch controllers). These features may be more important for some genres of games than others, including, for example, racing games where users may be more likely to use a controller.⁴²⁹

platforms that provide a remote play together functionality as part of the platform as opposed to adding on the third-party software that you just described? A. So my knowledge of all of the features of all of the platforms is not exhaustive, but I don’t remember that feature existing on any other service -- Q. Okay. A. -- as bundled.”).

⁴²⁵ Tim Stobierski, “What are network effects?” *Harvard Business School*, November 12, 2020, available at <https://online.hbs.edu/blog/post/what-are-network-effects>, accessed on May 11, 2024 (“Direct network effects occur when the value of a product, service, or platform increases simply because the number of users increases, causing the network itself to grow.”).

⁴²⁶ Since these features benefit users by enabling additional functionality and enhancing the multiplayer gaming experience, these features increase the value of multiplayer games to users, which may drive additional sales (i.e., they may benefit publishers).

⁴²⁷ [REDACTED] Deposition, p. 246 (“Q. Okay. So in the retail release on October 16, 2017, and later, *Overgrowth* was designed to be played in multiplayer mode using -- provided you were using a single computer locally? A. Yes.”).

⁴²⁸ [REDACTED] Deposition, pp. 246–248 (“Q. Okay. So in the retail release on October 16, 2017, and later, *Overgrowth* was designed to be played in multiplayer mode using -- provided you were using a single computer locally? A. Yes ... Q. Okay. And the remote play together feature, which is at the bottom of the list [containing Steam features supported by *Overgrowth*], enables people who are remote from each other over the Internet to play together and essentially expand the capability from just being a local computer game? A. Yes.”).

⁴²⁹ Mark Sammut, “PC Games That Play Better With A Controller,” *GameRant*, March 26, 2024, available at <https://gamerant.com/pc-games-better-with-controller>, accessed on April 20, 2024 (“Most racing games generally play better

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236. Publishers benefit from these types of features to different degrees depending on the extent to which their users use or want to use controllers. Exhibit 15 summarizes controller usage within the user bases of the top 15 publishers on Steam.⁴³⁰ Three of the top 15 publishers on Steam have a user base in which 40 percent or more of users use a console controller or another kind of controller. Another three of these publishers have user bases in which less than 1 percent of users use console or other controllers. Four of the other nine publishers have audiences that use the feature at roughly twice the average rate of usage among all publishers on Steam. This striking variation demonstrates how publishers’ audiences may vary in the value they place on launching titles from Steam compared to other platforms. As a result, these features may add more value to some publishers’ games than to others. Consequently, quality-adjusted revenue shares across publishers will differ both in the actual world and in Dr. Schwartz’s alleged but-for world.
237. The benefits from user features such as the Steam Workshop and Steam’s VR features can also vary by publisher. For example, Wolfire’s title *Overgrowth* supports mods, indicating that Wolfire may benefit from Steam Workshop features that enable users to create and share game mods with other users.⁴³¹ A publisher whose games do not support mods may not receive the same benefits. Similarly, VR games such as Dark Catt’s only title, *Djinni & Thaco*, and other VR titles such as *Beat Saber*, a music/rhythm game, may benefit more from Steam’s VR features.⁴³² These features include VR Status Monitor, which allows users to stay informed of their system status at a glance, Chaperone, which allows users to remain aware of their physical space during game play, and SteamVR Home, which allows users to customize their VR experience.⁴³³

with a controller than a keyboard or mouse. For racing sims, a quality wheel is the way to go, but the same doesn’t always hold true for arcade racers. When driving the fastest cars in Forza Horizon 5, players might find themselves most comfortable with a controller as the vehicles tend to be easier to direct.”).

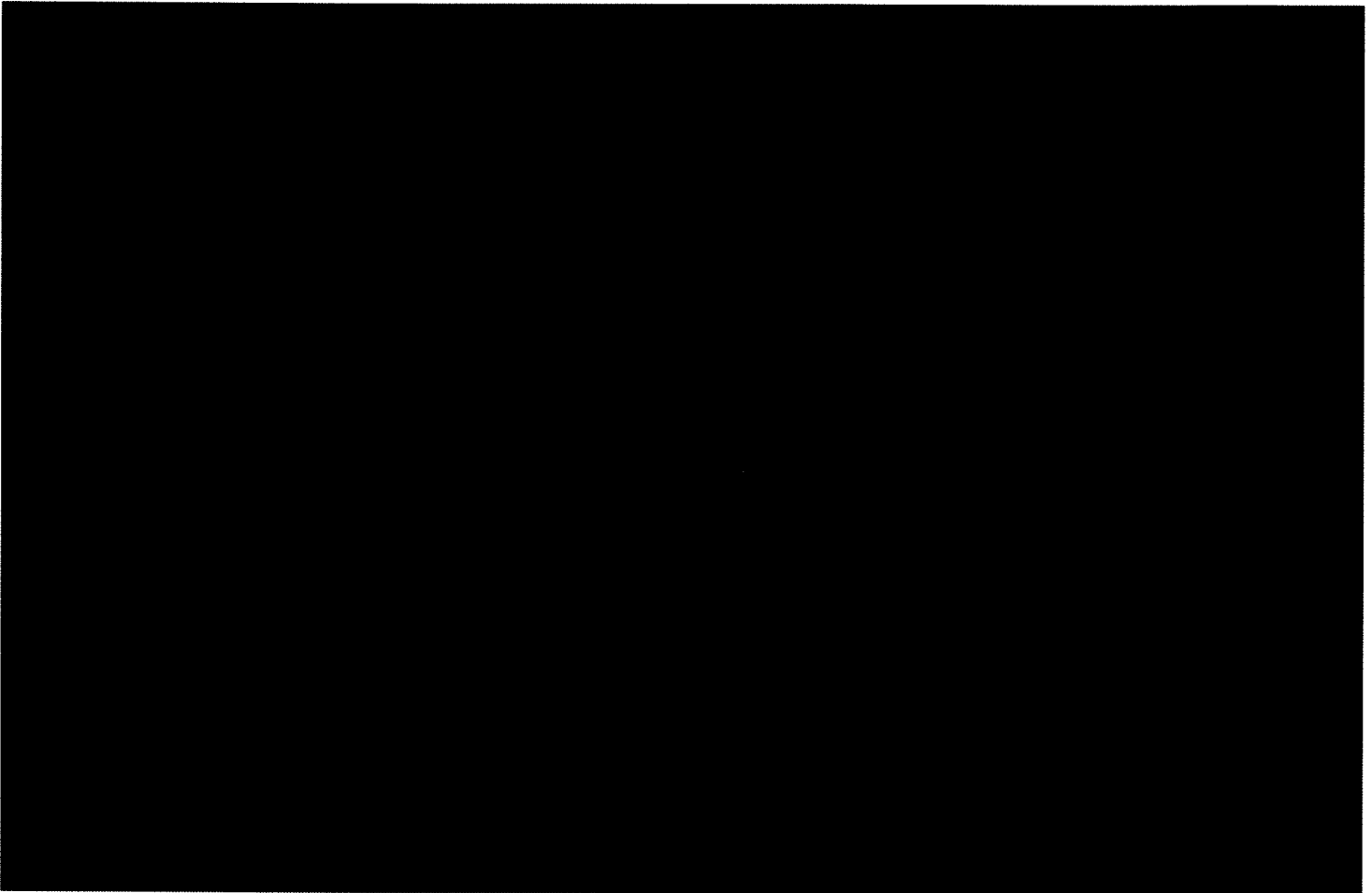
⁴³⁰ These are the top 15 publishers by 2022 net sales.

⁴³¹ [REDACTED] Deposition, p. 97 (“Q. Are there Steam-specific features that those games take advantage of? A. *Overgrowth* used the workshop, the mod workshop.”).

⁴³² Dark Catt Studios, “*Djinni & Thaco: Trial by Spire*,” available at <https://djinniandthaco.darkcatt.com/>, accessed on May 11, 2024 (“*Djinni & Thaco: Trial By Spire*, is a first person VR tower defense strategy game where you take command of the battlefield constructing towers and casting spells against waves of the realm’s fiercest fighters.”); Dan Stapleton, “*Beat Saber* Review,” *IGN*, May 28, 2019, available at <https://www.ign.com/articles/2019/05/28/beat-saber-review>, accessed on May 6, 2024 (“Whenever I want to show VR to friends who’ve never tried it before (which is one of the great pleasures of owning a headset), *Beat Saber* is the game I fire up first.”).

⁴³³ Steam, “Steam VR,” available at <https://www.steamvr.com/en/>, accessed on April 19, 2024 (“Stay informed of your VR system’s status at a glance with the ever-present VR Status Monitor ... Everyone’s play area is a little different. With the Chaperone system you can set and view the boundaries of the space available in your room and remain aware of that space while you’re immersed in VR ... Explore SteamVR Home, an interactive launch pad for your VR experiences. Customize SteamVR Home with new environments and props created by the community and use its built-in social functions to socialize with friends and other players. Use additional wearables and props you find by completing quests in other SteamVR Home environments to customize your own avatar.”).

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Exhibit 15***Publishers vary in the degree to which their Steam audiences use console or other controllers***

Source: Schwartz Report, backup materials, Steam Controller Use Data

Note: This chart displays the percentage of users with a controller for the top 15 Steam publishers by 2022 net sales. Valve is excluded. The Steam players data was linked to a publisher using the 'primary_app_id' field in the Steam revenue data for the year 2022. For each publisher, the player-weighted average controller to player ratio was taken across each game. The horizontal dashed line at 9.8 percent represents the player-weighted average controller to player ratio for all publishers outside the top 15, excluding Valve.

238. The amount of time users spend playing games can also vary significantly across publishers. The median publisher by median per-user playtime across the life of their games has a median player who spends just under half an hour on its titles, whereas more popular publishers might have a median play time over 10 hours over the lifetime of their games. In more extreme instances, a publisher's median play time per title can be over 400 hours.⁴³⁴
239. This variation in play time is important because the total length of time a user devotes to a game relates to the amount of time a user has access to features on Steam—which in turn varies considerably across titles and publishers. Access to a rich set of features may

⁴³⁴ To calculate a publisher's median playtime per game and user, I look at the lifetime playtime for each user of each game associated with a publisher. I take the median of each of these lifetime playtime values. The large median engagement numbers reflect a meaningful share of the overall user experience on Steam. Over 26 percent of all engagement is associated with publishers whose median playtime per game and user is over 10 hours. See Workpaper 28.

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be more important to a user who invests dozens of hours on a title than a user who spends only a short time playing games. The fact that publishers’ audiences vary widely in their average play time indicates that these audiences vary in the extent to which they benefit from certain Steam features. As a result, some publishers benefit from Steam features more than others—that is, they have quality-adjusted revenue shares that are lower compared to others. Consequently, some publishers may expect larger changes in quality-adjusted revenue shares in Dr. Schwartz’s but-for world than others.

240. Assessing the harm to each proposed class member from an alleged reduction in innovation in consumer-facing features would require individualized inquiry, game-by-game, into the extent to which each publisher’s audience benefits from these features and how those benefits would likely change absent Valve’s alleged conduct. Even in instances where data on the *usage* of a particular feature related to specific titles may be available, the benefits derived from these features will be unique to each game and publisher and cannot be established using common proof.⁴³⁵ The benefit derived from a given feature can vary based on factors such as a publisher’s individualized cost of replacement for the feature, the costs of modifying the title to not rely on that feature, and the resources each publisher has available to bear these costs. Therefore, establishing class-wide antitrust impact would require understanding the value that each publisher places on these features for each of their titles and their effects on the quality-adjusted revenue share of each individual publisher.

5.2.2. Publisher-facing features

241. In addition to the user-facing features discussed in the previous section, Steam supports a variety of publisher-facing features that enable publishers to both sell their titles on Steam and ship those titles with additional functionality, such as achievements, matchmaking, or the integration of user-generated content.⁴³⁶ These types of publisher-facing tools benefit publishers in different ways.⁴³⁷
242. Some publishers may have more resources to independently develop these types of features than others and may rely less on Steam’s publisher-facing features. These firms are less likely to be harmed by any alleged reduction in Steam’s innovation on publisher-facing features. By contrast, other publishers may lack these resources, rendering them

⁴³⁵ For example, a game that relies heavily on VR innovation and features may benefit more from Steam’s VR features than a game that relies more heavily on storyline but still uses VR, even though both games *use* Steam’s VR features. The publisher of the first game in this instance would derive greater value from Steam’s features than the publisher of the second game, all else equal.

⁴³⁶ Steamworks, “Features,” available at <https://partner.steamgames.com/doc/features>, accessed on April 19, 2024 (“Steamworks offers a large collection of tools that can help you add value to your product. These include things like Matchmaking, Achievements, and Steam Workshop (User-Generated Content). You are free to use as few or as many as you like – not all features of Steamworks are appropriate for all products.”); Steamworks, “Steam Direct,” available at <https://partner.steamgames.com/steamdirect>, accessed on May 2, 2024 (“Welcome to Steam Direct! This new submission path is designed to provide a streamlined, transparent, and affordable route for new game developers from anywhere in the world to bring games to Steam.”).

⁴³⁷ For example, testimony from Valve witnesses in this matter indicates that developers who build their game for multiple platforms will make less use of features offered through Steamworks. See Miller Deposition, p. 89 (“Q. What’s the – so what’s the problem posed by developers who build from multiple platforms? A. The problem there is really a lack of uptake of features that we build and provide. There are restrictions on the other major platforms that, to my understanding, do not allow games to ship with Steamworks integrations on those platforms. So a developer can’t do the work on Steam and also benefit from it other places.”).

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more likely to self-publish through Steam Direct, to make greater use of Steam’s publisher-facing features, and to therefore benefit from Valve’s innovations to a greater extent.

243. Publishers may also vary in the benefits they derive from the introduction of self-publishing on Steam. Until June 2017, some publishers hoping to publish their games on Steam used Steam Greenlight, a system where users voted to express interest in games, with the most popular games ultimately being published on the platform.⁴³⁸ In June 2017, Valve replaced this system with Steam Direct, which allows publishers to publish their games on Steam directly, without having to reach any popularity threshold.⁴³⁹ As Professor Rietveld explained, “[t]he introduction of Steam Direct has thus further lowered entry barriers for publishers. As would be expected, the number of new games available on Steam continued to increase dramatically following the introduction of Steam Direct in 2017.”⁴⁴⁰ Dr. Schwartz claims that this change led to a uniform decrease in game discoverability on the platform and “harm[ed] publishers’ ability to reach users and make game sales.”⁴⁴¹ However, Dr. Schwartz ignores the many publishers who lacked enough votes under Greenlight and, therefore, for whom Steam Direct opened the door to publishing on Steam.⁴⁴² It cannot be determined which of those publishers would have received enough votes under Greenlight. Therefore, Dr. Schwartz cannot show that publishers were injured by this alleged decrease in platform quality—the switch from Greenlight to Steam Direct—in a common fashion.
244. Publishers also differ in the types of games they publish, which affects the benefits they derive from different Steam features. For example, publishers who focus on single-player titles do not benefit from the matchmaking tools that Steam offers to developers of multiplayer content.⁴⁴³ In 2022, █ percent of publishers on Steam did not make *any* of their revenue on multiplayer games,⁴⁴⁴ which suggests that a large group of the proposed class would not be harmed by an alleged reduction in innovation for multiplayer features.

⁴³⁸ Sheena Perez, “Steam Greenlight vs. Steam Direct: What indies need to know,” *Game Developer*, July 10, 2017, available at <https://www.gamedeveloper.com/business/steam-greenlight-vs-steam-direct-what-indies-need-to-know>, accessed on April 9, 2024 (“[O]nce your page is live your title is now on Steam Greenlight where users vote ‘Yes,’ ‘No,’ or ‘Maybe’ to express interest ... After battling your way to the very top of the popularity contest (top 5 spots) your game would get ‘Greenlit by the community.’”).

⁴³⁹ Jeffrey Matulef, “Steam Greenlight to be replaced with Steam Direct next week,” *Eurogamer*, June 6, 2017, available at <https://www.eurogamer.net/steam-greenlight-to-be-replaced-with-steam-direct-next-week>, accessed on April 19, 2024 (“After nearly five years Valve’s crowd-voting platform Steam Greenlight is coming to an end, only to be replaced by Steam Direct on 13th June. As previously discussed, Steam Direct will allow any developer to post their game to Valve’s marketplace so long as they pay a \$100 fee per title. This fee can later be recouped once a game reaches \$1k in sales.”).

⁴⁴⁰ Rietveld Report, ¶ 131.

⁴⁴¹ Schwartz Report, ¶ 225.

⁴⁴² One week prior to the release of Steam Direct, more than 3,400 Steam Greenlight submissions were pending. With the move to Steam Direct, Valve expressed a goal to “Greenlight as many of the remaining games as we have confidence in,” prior to the release of Steam Direct, and that “titles that are not ultimately Greenlit may still be brought to Steam via Steam Direct.” See Steam, “Closing Greenlight Today, Steam Direct Launches June 13,” June 6, 2017, available at <https://steamcommunity.com/games/593110/announcements/detail/1265922321514182595>, accessed on May 11, 2024.

⁴⁴³ These matchmaking tools assist developers in implementing multiplayer functionality in their games by providing a set of functions that “enable users to find other users to play a game with.” See Steamworks, “Steam Matchmaking & Lobbies,” available at <https://partner.steamgames.com/doc/features/multiplayer/matchmaking>, accessed on April 19, 2024.

⁴⁴⁴ Workpaper 29.

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245. As another example, publishers who do not rely on user-generated content or microtransactions do not benefit from features that make these elements easier to implement and would not be harmed by an alleged lack of innovations on these features. To illustrate this point, note that while more than [REDACTED] other publishers on Steam monetize their games through microtransactions, neither Named Plaintiff Wolfire nor Dark Catt publishes games that offer microtransactions. They do not currently benefit from microtransaction monetization features and would benefit less from enhancements to such features in Dr. Schwartz’s alleged but-for world as compared to publishers who rely heavily on such features.⁴⁴⁵
246. Understanding the extent to which any publisher is impacted by Valve’s alleged reduction in innovation on publisher-facing features requires analyzing how each firm benefits from those features in the actual world and how they would benefit from alleged enhancements to those and other features in Dr. Schwartz’s alleged but-for world. Even in instances where data on a publisher’s use of particular Steam features may be available, these data are not sufficient to establish class-wide antitrust impact. The benefit derived from a given feature can vary based on factors such as a publisher’s individualized cost of implementing features such as multiplayer matchmaking and the resources each publisher has available to bear these costs. Analyzing the benefits each publisher derives from these features and their effect on publishers’ quality-adjusted revenue shares would require individualized inquiry and cannot be established using common proof.

5.2.3. Search and discoverability features

247. Valve invests in improving users’ ability to search for and discover games they may be interested in purchasing, and publishers benefit differently from these features. Steam promotes titles on its store page, both by recommending curated titles to a broad audience and by algorithmically identifying titles that may interest users based on their individual purchase history and other factors.⁴⁴⁶ Steam also has Game Hubs for individual titles, which provide a centralized location for (a) users to discuss and share content about games, and (b) publishers to distribute news and updates about their games.⁴⁴⁷ Lastly, Steam has an extensive user review system, which can enhance game visibility and aid in publishers’ marketing of games.⁴⁴⁸

⁴⁴⁵ Workpaper 30. Steam offers tools to publishers to help publishers implement microtransactions in their games. See Steamworks, “Microtransactions (In-Game Purchases),” available at <https://partner.steamgames.com/doc/features/microtransactions>, accessed on April 20, 2024.

⁴⁴⁶ Evgeny Obedkov, “Valve breaks down how Steam visibility works: ‘Algorithms react to player interest quickly and automatically,’” *Game World Observer*, September 4, 2023, available at <https://gameworldobserver.com/2023/09/04/how-steam-visibility-works-algorithms-curated-featuring>, accessed on April 19, 2024 (“So there are two types of visibility on Steam: Algorithmic (personalized) — Featured & Recommended capsule, Discovery Queue, recommendations based on games users play or publishers they know, etc.; Curated featuring (shown to all users) — big banner on top of the front page, Special Offers, Daily Deals, etc. ... [R]evenue remains the main way for Steam to measure player interest. So the more players spend both time and money on a certain game, the stronger the signal to the store’s algorithms that it could be interesting to other users ... Steam’s algorithms react to player interest quickly and automatically ... To increase chances of getting a curated promo, Valve encourages devs to use regional pricing, worth with the community, and add localization, controller support, and other stuff that would make their game more accessible and appeal to a broad audience.”).

⁴⁴⁷ See Exhibit 13 and Appendix Section 13.1.

⁴⁴⁸ Appendix Section 13.1.

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248. Discoverability on Steam may be less relevant for some publishers. For example, titles such as *Assassin’s Creed* and *Call of Duty* have regular release cycles and a customer base that anticipates and independently searches for these titles.⁴⁴⁹ Ubisoft and Activision Blizzard, the publishers of these titles, withdrew these titles from Steam.⁴⁵⁰ The success of subsequent franchise launches suggests that these publishers do not rely on Steam’s discoverability features to reach their audiences; for example, when Ubisoft released *Assassin’s Creed Valhalla* in November 2020, it did not release the game on Steam; nevertheless, the game earned more than [REDACTED] in revenue within the first 12 months of its release across PC and console platforms.⁴⁵¹
249. Publishers also differ in the extent to which they engage in their own marketing activities. Some publishers may have large marketing budgets to promote the release of new titles, limiting the ability of Steam’s discoverability features to generate additional awareness of their games. For example, in its final report for the Microsoft-Activision merger, the U.K. Competition and Markets Authority received marketing cost estimates from publishers of AAA titles ranging from \$50 million to \$550 million per title.⁴⁵² By contrast, as discussed in Section 2.1, other publishers may have limited funds for marketing, which limits the extent and methods of their marketing. Professor Rietveld acknowledges this variation in marketing budgets and strategies across publishers, stating that while “Larger publishers may spend millions of dollars marketing their games ... most independent (colloquially referred to as ‘indie’) developers, with small marketing budgets, need a focused marketing strategy incorporating both paid and organic marketing.”⁴⁵³
250. Establishing common antitrust impact requires establishing a benchmark benefit from discoverability in the actual world and comparing it to the benefit of allegedly enhanced discoverability in the but-for world. However, determining the value of Steam’s existing search and discoverability for any given publisher, and its effect on the quality-adjusted

⁴⁴⁹ The publishers of these titles also engage in heavy advertising outside of Steam, which I discuss below. For example, *Call of Duty* has a website that contains news and information about *Call of Duty* games and includes links to Steam and other platforms on which you can purchase them. See, e.g., Call of Duty, “Call of Duty,” available at <https://www.callofduty.com/>, accessed on May 11, 2024; Call of Duty, “Call of Duty: Modern Warfare III,” available at <https://www.callofduty.com/modernwarfare3/pc>, accessed on April 17, 2024.

⁴⁵⁰ See Section 3.1 above.

⁴⁵¹ Alissa McAloon, “Assassin’s Creed Valhalla Won’t Be Launching on Steam,” *Game Developer*, April 29, 2020, available at <https://www.gamedeveloper.com/business/-i-assassin-s-creed-valhalla-i-won-t-be-launching-on-steam>, accessed on April 19, 2024 (“Ubisoft’s freshly unveiled next *Assassin’s Creed* game, *Assassin’s Creed Valhalla*, won’t be up for purchase on Steam at launch, instead opting to bring its PC release to only the Epic Games Store and its own Uplay platform.”); Adam Bankhurst, “Assassin’s Creed Valhalla’s Release Date Moved Up One Week to Match Xbox Series X, Xbox Series S Launch,” *IGN*, September 9, 2020, available at <https://www.ign.com/articles/assassins-creed-valhallas-release-date-moved-up-one-week-to-match-xbox-series-x-xbox-series-s-launch>, accessed on April 25, 2024 (“Assassin’s Creed Valhalla’s release date has moved up one week to November 10, 2020, to match the launch of both the Xbox Series X and Xbox Series S.”); Workpaper 31.

⁴⁵² CMA MS-ABK Final Assessment, ¶ 9.19 (“A fourth publisher [] submitted that the costs related to developing and regularly releasing new titles can vary significantly depending on the game type or business model of a particular studio. It provided an example that for one AAA game the development budget value could range between \$90 million and \$180 million, whereas the marketing budget could range between \$50 million and \$150 million. This publisher also submitted that for one of its major franchise’s development costs reached \$660 million and marketing costs peaked at almost \$550 million.”).

⁴⁵³ Rietveld Report, ¶ 35 (“Effective marketing is an important part of a video game’s success. Larger publishers may spend millions of dollars marketing their games. In the case of *GTA 5*, it is estimated that publisher Take-Two Interactive Software (‘Take-Two’) spent over \$100 million to market the game in addition to the estimated \$137.5 million in development costs. However, most independent (colloquially referred to as ‘indie’) developers, with small marketing budgets, need a focused marketing strategy incorporating both paid and organic marketing. Digital distribution platforms have paved the way for indie developers to self-publish their own games.”).

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revenue share for that publisher, would require an investigation into many individualized factors. These factors include the benefits to individual titles promoted in the Steam store, information on the publisher’s own marketing budget and strategy, and the extent to which individual publishers receive the marketing benefits from popular features such as Steam reviews.

5.2.4. Tools that enable publishers to reach a wider international audience

251. Valve supports a variety of tools that allow publishers to reach a wider international audience, and publishers vary in the extent to which they benefit from these features. For example, Valve offers many payment options for purchasing titles on Steam.⁴⁵⁴ These payment options are particularly important for publishers with audiences concentrated in countries that require or prefer specific payment options, such as Japan. In a 2019 conference presentation, Valve discussed how payment options such as in-store payments were an important part of its global expansion into Japan.⁴⁵⁵ Valve also noted that in Asian countries, 87.5 percent of all transaction volume was driven by one of the 90+ payment options outside of the “standard” payment options.⁴⁵⁶
252. How much publishers benefit from Steam’s support of non-standard payment methods depends on the extent to which their audiences use these options. For some publishers, serving Japan is important; for others, it is not a consideration. For example, a small fraction of publishers earn the majority of their revenue on Steam from sales denominated in Yen, while ■ percent of publishers on Steam earn *no* revenue from sales denominated in Yen.⁴⁵⁷ More generally, ■ percent of publishers on Steam earn no revenue from sales denominated in Yen, Yuan, Rupee, or Won.⁴⁵⁸ This suggests that some publishers benefit more than others from Steam’s support of diverse payment options and that publishers would benefit differentially from alleged enhancements to these features in Dr. Schwartz’s but-for world.
253. Language options (including nearly 30 languages supported on Steam) also help publishers more easily reach international audiences.⁴⁵⁹ How much a publisher benefits from this international reach varies with the extent to which their games are sold in a variety of countries.⁴⁶⁰ For example, a publisher who typically markets and sells games

⁴⁵⁴ For example, Valve offers more than 100 payment options across Asian countries. See GDCVault, “Steam Business Update (Presented by Valve),” March 2019, available at [https://gdcvault.com/play/1026191/Steam-Business-Update-\(Presented-by\)](https://gdcvault.com/play/1026191/Steam-Business-Update-(Presented-by)), accessed on April 23, 2024, slide 73.

⁴⁵⁵ GDCVault, “Steam Business Update (Presented by Valve),” March 2019, available at [https://gdcvault.com/play/1026191/Steam-Business-Update-\(Presented-by\)](https://gdcvault.com/play/1026191/Steam-Business-Update-(Presented-by)), accessed on April 23, 2024, slide 67.

⁴⁵⁶ GDCVault, “Steam Business Update (Presented by Valve),” March 2019, available at [https://gdcvault.com/play/1026191/Steam-Business-Update-\(Presented-by\)](https://gdcvault.com/play/1026191/Steam-Business-Update-(Presented-by)), accessed on April 23, 2024, slide 73.

⁴⁵⁷ Workpaper 32.

⁴⁵⁸ Workpaper 33.

⁴⁵⁹ Steamworks, “Languages Supported on Steam,” available at <https://partner.steamgames.com/doc/store/localization/languages>, accessed on April 19, 2024. In contrast, EGS supports only 16 languages. See Epic Games, “Frequently Asked Questions,” available at <https://www.epicgames.com/site/en-US/epic-games-store-faq>, accessed on April 19, 2024.

⁴⁶⁰ I note that games are likely to be sold more often in countries speaking languages in which the game has an available localization. For example, games with a German localization may be more likely to be purchased in Germany, Austria, or Switzerland compared to games that do not have a German localization. A localization here refers to an adaptation of a game for specific regions or languages, including language translation. See Kimberly Wallace, “The Trials And Tribulations Of Video

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to users in many non-English-speaking countries may benefit from these additional language options, while a publisher who markets and sells games mostly to English-speaking audiences in the U.S., U.K., Canada, and Australia may benefit less from language options other than English. Publishers vary widely in this dimension: between October 2005 and December 2022, ■ percent of publishers on Steam generated more than two-thirds of their revenues from English-speaking countries, whereas ■ percent of publishers generated more than two-thirds of their revenues from *non*-English-speaking countries.⁴⁶¹ These differences in sales across countries suggest that publishers are likely to benefit differently from Steam’s language options.

254. Any analysis attempting to establish common antitrust impact would require an investigation into the benefits of tools that enable publishers to reach a wider audience and the effect of those benefits on each publisher’s quality-adjusted revenue share. This would include individualized inquiry into use of various payment options and users’ preferred languages, as well as the game- and publisher-specific benefits derived from that use.

Game Localization,” *Game Informer*, November 24, 2021, available at <https://www.gameinformer.com/2021/11/24/the-trials-and-tribulations-of-video-game-localization>, accessed on April 19, 2024.

⁴⁶¹ ■ percent of publishers generated more than 90 percent of their revenues from English-speaking countries, and ■ percent of publishers generated more than 90 percent of their revenues from non-English-speaking countries. See Workpaper 34. Non-English-speaking countries are considered to be all countries but the U.S., U.K., Canada, and Australia. I note that the Valve package revenue data begins in October 2015.

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6. DIFFERENCES IN PUBLISHERS' USE OF ALTERNATIVE PLATFORMS CREATE VARIATION IN ALLEGED ANTITRUST INJURY; ASSESSING PUBLISHERS' USE OF ALTERNATIVE PLATFORMS WOULD REQUIRE INDIVIDUALIZED INQUIRY

255. Plaintiffs' claim of common injury among proposed class members assumes that individual publishers responded to Valve's alleged conduct in a common fashion. In analyzing alleged antitrust injury and damages, Plaintiffs and Dr. Schwartz fail to appropriately capture how publishers would reallocate their titles and sales across platforms.
256. As discussed in Section 2.3, publishers have different options for where to publish their games, including first- and third-party PC platforms and console platforms. In this section, I document differences in publishers' use of each option and explain the complexity of assessing publishers' choices in the but-for world. The fact that publishers in the proposed class use a variety of alternative platforms other than Steam underscores the importance of assessing each publisher's situation to properly determine antitrust injury (if any). This is because publishers can shift sales from Steam to other distribution channels to reduce their exposure to Valve's alleged conduct (e.g., to pay less of Valve's allegedly supracompetitive revenue share). For example, in the presence of Valve's alleged conduct, some publishers may reallocate sales from PCs to consoles because they have a larger existing audience on consoles. Others may reallocate sales from Steam to other PC platforms, including their own stores. To shift sales, publishers can change the availability of their titles or the focus of their advertising or marketing across platforms. Therefore, publishers' choices to reallocate sales to other channels affect their alleged antitrust injury and depend on many factors, including whether publishers were already offering their titles on multiple platforms in the actual world.
257. As discussed in this section:
- a. Publishers vary significantly in their participation in alternative distribution platforms (Section 6.1).
 - b. Assessing harm would require individualized inquiry into publishers' relationships with alternative platforms (Section 6.2). In particular, the analysis would require (a) publisher- and game-level data about the distribution options each individual proposed class member considers and uses in the actual world, (b) all the variables that would affect a publisher's choice of distribution in the but-for world without the alleged conduct, and (c) an estimate of the quality-adjusted revenue shares that publishers pay in the but-for world. Plaintiffs and Dr. Schwartz offer no opinion on these questions, and the information necessary to analyze them was not produced in this litigation and cannot be obtained from Valve.

6.1. Differences in publishers' use of alternative platforms undermine Plaintiffs' claims of common injury

258. As discussed in Section 2.3, publishers have different options for where to publish their games. In this section, I use the limited data available to document differences in

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publishers' usage of these alternative platforms. The available data do not provide information on all publishers in the proposed class, all their games, or all the distribution choices for each of those publishers and games. The available data do allow me to determine that there are significant differences in platform use in the actual world, and therefore there is variation in antitrust impact and damages that cannot be appropriately determined without individualized inquiry. I find that (a) there is variation among top publishers on Steam over which alternative platforms to use, including on their own platforms (as first-party), on other PC platforms (third-party) besides Steam, and on consoles; (b) this variation also exists for other publishers outside of the top publishers on Steam; and (c) publishers vary not only in their choices of platforms, but also in how much they use any given platform.

259. First, some, but not all, publishers on Steam choose to distribute their games through other channels as well, including on their own PC platforms (first-party), on other third-party PC platforms besides Steam, and on consoles. To assess publishers' distribution choices, I first analyze [REDACTED] publishers on Steam, [REDACTED].⁴⁶² I find evidence that, even among [REDACTED] publishers, there is substantial variation in their use of alternative distribution platforms, including their own self-distribution platforms, other PC platforms, and consoles.
260. Exhibit 16 shows that [REDACTED] of [REDACTED] publishers on Steam in 2022 also operated their own PC platforms, while [REDACTED] did not.
261. In addition to distributing their games through Steam and their own digital PC platforms, these publishers also use other PC distribution channels to varying degrees. For example, customers can purchase EA games through platforms including EA App, Steam, and EGS.⁴⁶³ In fact, four of the six publishers (KRAFTON, Inc., Sega Europe Limited, Bungie, Inc., and PlayStation Mobile Inc.) in Exhibit 16 without their own distribution channel also distribute their games on EGS.⁴⁶⁴ I also note that, whether a publisher chooses to distribute its games through Steam, its own digital PC platform, or other PC distribution channels may also vary by game. In other words, a single publisher

⁴⁶² [REDACTED]

[REDACTED] See Workpaper 35.

⁴⁶³ EA Help, "Where to buy EA digital download games and virtual currency," September 25, 2023, available at <https://help.ea.com/en/help/faq/where-to-buy-ea-games-v2/>, accessed on April 28, 2024 ("The EA app is the easiest way to buy your favorite EA games to start your own game library ... Trusted PC digital online retailers: Worldwide: Epic Games, Humble Bundle, Ubisoft, Valve/Steam").

⁴⁶⁴ Vikki Blake, "PUBG: Battlegrounds is now available on Epic Games Store," *Eurogamer*, December 10, 2022, available at <https://www.eurogamer.net/pubg-battlegrounds-is-now-available-on-epic-games-store>, accessed on April 19, 2024 ("Now, Krafton is adding another way for even more players to connect and squad up together with the addition of PUBG: Battlegrounds to Epic Games Store."); SEGA, "Sonic Frontiers in Now on the Epic Games Store!" November 22, 2023, available at <https://asia.sega.com/SonicFrontiers/en/information/231122.html>, accessed on April 19, 2024 ("Starting from today, the 22nd of November Epic Games Store users will be able to enjoy Sonic Frontiers"); Bungie Help, "Destiny 2 Epic Games Store Guide," available at <https://help.bungie.net/hc/en-us/articles/8299717104660-Destiny-2-Epic-Games-Store-Guide>, accessed on April 28, 2024 ("As of August 23, 2022, Destiny 2 is now available through the Epic Games Store."); PlayStation, "PlayStation games for PC," available at <https://www.playstation.com/en-us/games/pc-games/>, accessed on December 7, 2023 ("Explore a range of acclaimed titles from PlayStation Studios, now available to enjoy on PC via Steam or Epic Games Store.").

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may offer some of its games on several PC distribution platforms but offer others on only one.⁴⁶⁵

Note: [REDACTED] Valve is excluded. Public research was used to identify whether a publisher had its own distribution channel. Only PC distribution channels are included. PlayStation, for example, has access to its own PlayStation store if this restriction is relaxed. Bethesda Launcher is no longer in use as of May 11, 2022, but it was in use for most of the proposed class period. See backup for details.

262. Finally, these [REDACTED] publishers distribute their games on console platforms to varying degrees. Using publicly available data from Newzoo, Exhibit 17 reports that the proportion of a publisher’s games that are available on both Steam and console platforms, or exclusively on consoles, ranges from [REDACTED] percent just among these top [REDACTED] publishers.⁴⁶⁶

⁴⁶⁵ For example, PlayStation’s PC release of *Helldivers 2* is only available through Steam, while the publisher’s PC release of *The Last of Us Part I* is available through both Steam and EGS. See PlayStation, “PlayStation Games for PC,” available at <https://www.playstation.com/en-us/games/pc-games/>, accessed on December 7, 2023 (“*Helldivers 2*. Buy on Steam ... *The Last of Us Part I*. Buy on Steam. Buy on Epic Games”).

⁴⁶⁶ See Appendix Section 16; Workpaper 36.

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263. While some publishers use distribution options other than Steam, as evidenced by the distribution choices among [REDACTED] publishers, they nevertheless also often distribute their games through Steam in part because it offers unique features and an enhanced gaming experience (as discussed in Section 5.1.2). For example, Steam offers controller compatibility and Big Picture features,⁴⁶⁷ both of which create a more console-like

⁴⁶⁷ Steam, “New! Find Great Games To Play With DualShock and DualSense Controllers,” November 20, 2023, available at <https://store.steampowered.com/news/app/593110/view/3823053915988527061>, accessed on April 19, 2024 (“Steam has long made it easy to find games that have great support for Xbox controllers. Today’s Steam update expands on that foundation to help the millions of players with PlayStation’s DualShock and DualSense controllers easily find games to play with those devices. These improvements add better options for sorting and filtering areas of the Steam store, seeing clear compatibility information on individual store pages, and finding whether games in one’s library will work well with the controller in their hands ... If you enjoy kicking back and playing from a bit further away, you’ll find that all the above features and benefits are also part of Big Picture Mode.”).

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experience on Steam and which are used by many players on the Steam platform.⁴⁶⁸ Furthermore, publishers of games whose audiences already rely on these types of console-like features may find it easier to switch sales to consoles and to reduce their exposure to the alleged conduct.

264. Second, my analysis of [REDACTED] publishers on Steam likely understates the variation in alternative platform usage among proposed class members. Although it is not possible to evaluate the distribution choices of all proposed class members, I observe that many publishers [REDACTED] also use self-distribution, alternative third-party distribution platforms besides Steam, and console platforms—and that these publishers differ from each other in the set of distribution channels they choose.
265. For example, the Named Plaintiffs differ from each other as well as from other members of the proposed class in their use of distribution platforms. Wolfire distributes its titles on Steam as well as other channels, such as Humble Bundle, itch.io, and its own web page.⁴⁶⁹ Dark Catt sold its only title through Viveport (which specializes in the distribution of VR titles);⁴⁷⁰ it has not distributed its game through Steam since September 2020.⁴⁷¹
266. Looking across the proposed class more broadly, many publishers [REDACTED] engage in self-distribution. As discussed above in Section 2.3, smaller titles such as *Kerbal Space Program*, published by Private Division, which is owned by Take-Two, and *Factorio*, published by Wube Software, are also self-distributed. The method and cost of self-distribution among publishers [REDACTED] can vary widely, as discussed above in Section 2.3, ranging from relying on self-publishing tools to single-game PC launchers.
267. Publishers [REDACTED] may also rely on third-party platforms like itch.io or Steam key resellers to distribute their games on PC platforms besides Steam. Itch.io is well known in the industry for supporting indie developers. Itch.io allows publishers to adjust the revenue share they pay to itch.io, or to give away their games for free.⁴⁷²

⁴⁶⁸ Steam, “New: See Which Controllers Players Are Using In Your Game,” February 24, 2021, available at <https://store.steampowered.com/news/group/4145017/view/3061855517864424914>, accessed on April 28, 2024 (“48 Million players have used a controller in a game on Steam, with about 10% of daily game sessions being played with a controller.”).

⁴⁶⁹ Steam, “Receiver 2,” available at https://store.steampowered.com/app/1129310/Receiver_2/, accessed on April 28, 2024; Humble Bundle, “Overgrowth,” available at <https://www.humblebundle.com/store/overgrowth>, accessed on April 18, 2024; Itch.io, “Wolfire Games,” available at <https://wolfiregames.itch.io/>, accessed on April 15, 2024; Wolfire Games, “Games,” available at <https://www.wolfire.com/games>, accessed on April 19, 2024; Wolfire Games, “Receiver,” available at <https://www.wolfire.com/receiver>, accessed on April 20, 2024 (“Purchase Receiver for Mac, Windows, and Linux, and instantly get it DRM-free and on Steam ... Humble Widget”).

⁴⁷⁰ VIVE, “What is Viveport?” available at https://www.vive.com/us/support/vive-focus-plus/category_howto/what-is-viveport.html, accessed on April 19, 2024 (“VIVEPORT is the app store for virtual reality content and experiences.”); Deposition of John Robb (Dark Catt), November 28, 2023, p. 116 (“Q. And you testified earlier that you can -- a person can buy the Djinni & Thaco game at the HTC VIVE store. Is that correct? A. That’s correct.”).

⁴⁷¹ Deposition of Jason Owens (Dark Catt), December 6, 2023, pp. 27–28 (“Q. ... Was there a time when Djinni & Thaco was removed from Steam? A. Yes, there was. Q. And do you know when that occurred? A. To the best of my recollection, it was September 4th. I’d actually have to look at the exact date. Q. Of 2020? A. Yes.”).

⁴⁷² Itch.io, “Creator FAQ,” available at <https://itch.io/docs/creators/faq>, accessed on April 19, 2024 (“You get to decide how much you want to support itch.io by choosing what percentage of your sales should go towards our operational costs and continued development of the platform. We call that open revenue sharing.”); Itch.io, “Pricing,” available at <https://itch.io/docs/creators/pricing>, accessed on April 19, 2024 (“When configuring your pricing you have three options to control what kinds of payments are accepted, if any ... No payments — All payments are disabled on the project. All files are freely downloadable.”).

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Itch.io attracts smaller publishers and has over 900,000 titles available.⁴⁷³ Similarly, Steam key resellers such as the Humble Store also often attract smaller, indie developers. Humble Store advertises that “Here at Humble Bundle, we love indie games,” and describes its philosophy to “make it easier for indie developers to succeed in gaming.”⁴⁷⁴ As yet another example of PC platform alternatives to Steam that publishers [REDACTED] may use, EGS launched a publishing tool for game developers and publishers in March 2023.⁴⁷⁵ EGS advertises that the tool reaches a growing audience of over 68 million monthly active users and that publishers will receive 88 percent of the revenue for the games sold through EGS. Publishers also have an option to use their own or a third-party payment solution to receive 100 percent of the revenue from in-app purchases.⁴⁷⁶ The tool is available to any developer or publisher with games that meet the store’s requirements.⁴⁷⁷

268. Publishers [REDACTED] also use console platforms to varying degrees. [REDACTED] the proportion of a publisher’s games that are available on both Steam and console platforms, or exclusively on consoles, also ranges from [REDACTED] percent.⁴⁷⁸

269. Third, publishers vary not only in their choice of platforms on which to distribute their games, but also in how much they use any given platform (i.e., how much of a publisher’s revenue is generated on each platform). As discussed in Section 6.2 below, the available data are insufficient to determine each publisher’s platform choice and the extent to which they use those platforms in the actual world (let alone how those choices might change in the but-for world). However, the available data illustrate what individualized inquiry might reveal about variation in the extent to which publishers rely on different platforms. Exhibit 18 shows some of the variability among publishers who offer games on both PC and console platforms according to Newzoo. Among publishers who offer games on both PC and console platforms, which account for approximately [REDACTED] percent of publishers with non-zero revenue in the Newzoo data, the percentage of revenues from consoles ranges from [REDACTED]

⁴⁷³ Jared Newman, “How Itch.io Became An Indie PC Game Haven—And Steam’s Antithesis,” *PCWorld*, March 31, 2017, available at <https://www.pcworld.com/article/406186/how-itchio-became-an-indie-pc-game-havenand-steams-antithesis.html>, accessed on April 19, 2024 (“Big-budget publishers are absent, and most of the 58,000 games [as of March 2017] in Itch.io’s catalog—from roguelike brawlers to raft survival simulators—are free.”); Itch.io, “Top Games with Steam Keys,” available at <https://itch.io/games/steam-key>, accessed on April 18, 2024 (“Top Games ... 938,087 results [as of April 2024]”).

⁴⁷⁴ Humble Bundle, “What Is Humble Bundle?” available at <https://www.humblebundle.com/about>, accessed on April 17, 2024.

⁴⁷⁵ Epic Games, “Epic Games Store Launches Self-Publishing Tools for Game Developers and Publishers,” March 9, 2023, available at <https://store.epicgames.com/en-US/news/epic-games-store-launches-self-publishing-tools-for-game-developers-and-publishers>, accessed on April 19, 2024 (“Today, we’re launching self-publishing on the Epic games Store.”).

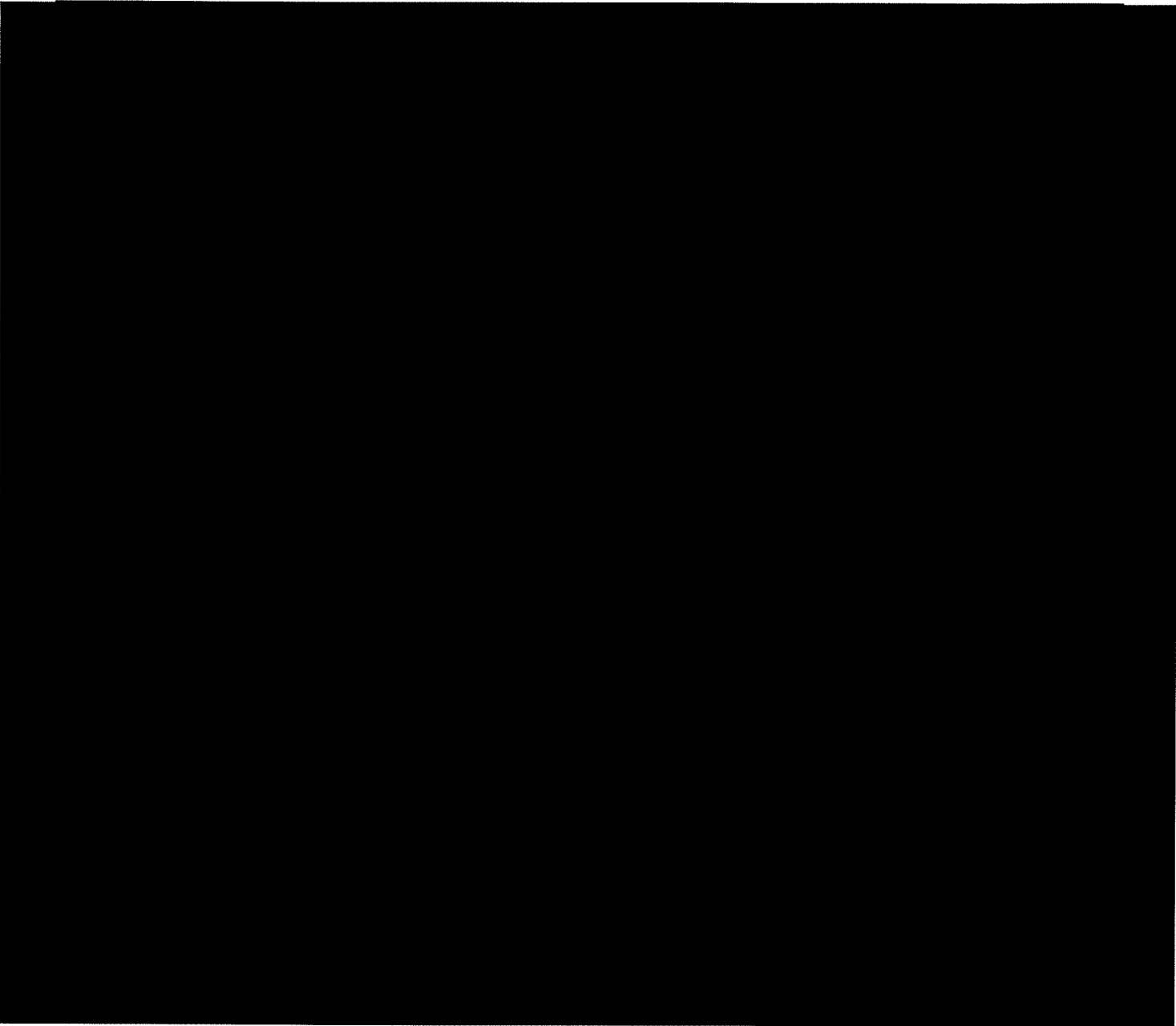
⁴⁷⁶ Epic Games, “Epic Games Store Launches Self-Publishing Tools for Game Developers and Publishers,” March 9, 2023, available at <https://store.epicgames.com/en-US/news/epic-games-store-launches-self-publishing-tools-for-game-developers-and-publishers>, accessed on April 19, 2024 (“These tools enable developers and publishers to efficiently release games, maintain their store presence directly, and reach a growing audience of over 68 million monthly active users ... Publishers receive 88% of the revenue for the games sold through Epic Games Store with an option to use your own or a 3rd-party payment solution to receive 100% of the revenue from in-app purchases.”).

⁴⁷⁷ Epic Games, “Epic Games Store Launches Self-Publishing Tools for Game Developers and Publishers,” March 9, 2023, available at <https://store.epicgames.com/en-US/news/epic-games-store-launches-self-publishing-tools-for-game-developers-and-publishers>, accessed on April 19, 2024 (“These tools are available to any developer or publisher with games meeting the store’s requirements”).

⁴⁷⁸ Workpaper 36.

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████ percent.⁴⁷⁹ In addition, several publishers not shown in Exhibit 18 relied *exclusively* on PC platforms for their 2022 revenue.



²⁷⁰. In sum, publishers vary in their choices of platforms. Publishers also vary in the extent to which they use those alternative distribution platforms. These findings suggest that comprehensive information on each publisher’s platform choices, and an investigation into how those would change in the but-for world, are important for assessing antitrust impact and calculating damages from Valve’s alleged conduct. In the next section, I show that access to that information requires individualized inquiry.

⁴⁷⁹ Workpaper 37.

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6.2. Individualized inquiry into publishers’ use of alternative platforms is necessary to assess any alleged antitrust impact

271. As discussed in Section 6.1, members of the proposed class differ substantially in their use of alternative platforms. It is therefore inappropriate to make determinations about any antitrust impact and damages from Valve’s alleged conduct based on *generalizations* about how publishers make distribution decisions and which distribution channels they choose. Instead, it is critical to determine each publisher’s available options and its choices among alternative platforms.
272. While the available data indicate that individualized inquiry is necessary to establish antitrust impact and damages, the available data are insufficient to determine each publisher’s platform choice (and thereby effective revenue share rate) both in the actual and the but-for worlds. In this section, I discuss the limitations in the available data and the implications for the assessment of class-wide harm. I note that the limitations I discuss are not exhaustive. I also consider the ways in which publishers’ differences in platform choice affect Plaintiffs’ theory of harm.
273. **Understanding distribution choices in the actual world.** Determining the distribution options available to each publisher for each of its games, as well as the choices each publisher makes about which platforms to use in the actual world, requires individualized inquiry. First, as noted above, Valve does not possess data on which platforms every proposed class member uses in the actual world, nor are such data available in this litigation. One would have to make individualized inquiry regarding game-level distribution decisions from every publisher in the proposed class.
274. Second, understanding the *options* available to each publisher also requires individualized inquiry. For example, it may be necessary to evaluate data regarding platforms on which each publisher considered offering a game, but where the deal was ultimately rejected, in order to understand whether a publisher was eligible for and/or pursued a particular distribution channel. For example, self-publishing through EGS is subject to meeting EGS requirements, which include supporting cross-play across all PC stores for multiplayer games, enabling EGS achievements, and achieving a certain level of game quality.⁴⁸⁰ Similar requirements hold for Microsoft, which requires an application process for self-publication to the Xbox store on Windows.⁴⁸¹ The need for such individualized data is further underscored by the fact that many platforms, such as EGS, negotiate deals on an individual basis. For example, EGS offered an exclusive deal to Unfold Games for the game *DARQ*, which was released on Steam in late 2018. After negotiating with EGS, Unfold Games rejected this offer in favor of offering their game

⁴⁸⁰ Epic Games, “Epic Games Store Launches Self-Publishing Tools for Game Developers and Publishers,” March 9, 2023, available at <https://store.epicgames.com/en-US/news/epic-games-store-launches-self-publishing-tools-for-game-developers-and-publishers>, accessed on April 19, 2024 (“The store is open to all developers and publishers whose titles meet the Epic Games Store requirements ... Notable requirements include: PC Crossplay for Multiplayer Games ... Epic Games Store Achievements ... Age Ratings for Regional Distribution ... Prohibited Content ... Game Quality.”).

⁴⁸¹ Microsoft, “Meet the Microsoft Game Developer Kit (GDK),” July 20, 2021, available at <https://developer.microsoft.com/en-us/games/articles/2021/07/meet-the-microsoft-game-developer-kit-gdk/>, accessed on April 19, 2024 (“Completing the journey to publish a game to the Xbox store on Windows – directly or through the Game Pass program – involves applying to qualify for an Xbox partners program, signing a license agreement, and configuring gaming services.”).

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on Steam as advertised and potentially across other platforms in the future.⁴⁸² In contrast, around the same time, the publisher of *Ooblets*, Glumberland, accepted an exclusivity deal from EGS.⁴⁸³

275. Discovery regarding distribution options would need to occur at the game level, since there are examples of publishers who release some games on Game Pass or EGS exclusively but not others.⁴⁸⁴ This type of data was not produced in this matter.
276. **Understanding distribution choices in the but-for world.** Publisher- and game-level data are also required to assess each publisher’s likely use of alternative platforms in a but-for world without the alleged conduct. An accurate assessment of antitrust impact and damages requires modeling publishers’ choices in the but-for world regarding *which* platforms they may switch to, *how many* of their games they may switch away from Steam, and *how much* marketing and business effort they may allocate toward each platform. The type of data that are required to model such decisions was not produced in this matter. As an example, individualized inquiry into the size of publishers’ audiences across platforms in the actual world would be required since this information may affect publishers’ ability to shift sales through advertising in the but-for world. Publishers and games with a larger audience on alternative platforms can shift their advertising targets from Steam users to other platform users, and have lower costs associated with that decision compared to publishers and games with smaller audiences.⁴⁸⁵ As another example, publishers may distribute on more platforms

⁴⁸² Unfold Games, “Why I turned down exclusivity deal from the Epic Games Store,” *Medium*, August 17, 2019, available at <https://medium.com/@unfoldgames/why-i-turned-down-exclusivity-deal-from-the-epic-store-developer-of-darq-7ee834edoac7>, accessed on May 3, 2024 (“On July 27th (Saturday) I uploaded a new trailer announcing the Steam launch date. On July 30th (Tuesday) I was contacted by the Epic Store, proposing that I enter into an exclusivity agreement with them instead of releasing DARQ on Steam. They made it clear that releasing DARQ non-exclusively is not an option. I rejected their offer before we had a chance to talk about money ... I had just announced the DARQ release date on Steam - pulling the game off Steam a few days after Steam release date announcement would forever ruin the credibility of my studio ... DARQ was listed on Steam since late 2018 ... It was important to me to give players what they wanted: options. A lot of people requested that DARQ be made available on GOG. I was happy to work with GOG to bring the game to their platform. I wish the Epic Store would allow indie games to be sold there non-exclusively, as they do with larger, still unreleased games (Cyberpunk 2077), so players can enjoy what they want: a choice.”).

⁴⁸³ Unfold Games, “Why I turned down exclusivity deal from the Epic Games Store,” *Medium*, August 17, 2019, available at <https://medium.com/@unfoldgames/why-i-turned-down-exclusivity-deal-from-the-epic-store-developer-of-darq-7ee834edoac7>, accessed on May 3, 2024 (“Coincidentally, the day after [Unfold Games] rejected [Epic’s] offer (July 31st), Ooblets’ developers announced that they accepted the exclusivity deal from the Epic Store”); Ooblets, “We Did the Thing,” July 31, 2019, available at <https://ooblets.com/2019/07/we-did-the-thing/>, accessed on May 11, 2024 (“we’ve signed with Epic for PC launch exclusivity.”).

⁴⁸⁴ See, e.g., Ubisoft, “Ubisoft games on PC Game Pass,” available at <https://www.ubisoft.com/en-us/help/purchases-and-rewards/article/ubisoft-games-on-pc-game-pass/000100611>, accessed on April 19, 2024 (“Selected Ubisoft games are available on the PC Game Pass!”); Drew Swanson, “Every Major PC Game Skipping Steam in Fall 2023,” *GameRant*, September 13, 2023, available at <https://gamerant.com/steam-missing-pc-games-2023-alan-wake-2-assassins-creed/>, accessed on April 19, 2024 (“However, PC players interested in grabbing Assassin’s Creed Mirage at launch won’t find the game for sale on Steam and will instead have to head over to the Epic Games Store or Ubisoft Connect in order to purchase it. This release strategy continues a trend for Ubisoft, as the company has shifted away from Steam in favor of pushing users to its own storefront, Ubisoft Connect, along with working with Epic Games to make new releases exclusive to its storefront as well.”); Vikki Blake, “These Ubisoft games are finally coming to Steam later this year,” *Eurogamer*, April 22, 2023, available at <https://www.eurogamer.net/these-ubisoft-games-are-finally-coming-to-steam-later-this-year>, accessed on April 19, 2024 (“Four more Ubisoft games are slated to join Steam later this year”).

⁴⁸⁵ For example, firms can shift their advertising dollars from promoting PC games on the Microsoft Store to promoting Xbox games on Xbox consoles. See Microsoft, “Increase app and game downloads with Microsoft Store Ads,” available at <https://about.ads.microsoft.com/en-us/solutions/ad-products/microsoft-store-ads>, accessed on April 19, 2024 (“Microsoft Store Ads will appear in the Microsoft Store app on Windows within search results and the Apps and Gaming tabs.”); Microsoft, “Display Ads for Online Marketing,” available at <https://about.ads.microsoft.com/en-us/solutions/ad-products/display->

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in the but-for world than in the actual world. Offering games on additional platforms may require publishers to incur additional costs in the but-for world. Therefore, publishers may experience cost savings in the actual world that must be taken into account while assessing antitrust impact and damages, and which would vary across publishers and games. In sum, Plaintiffs and Dr. Schwartz do not have the types of data needed to analyze proposed class members' decisions about distribution channels in the actual and but-for worlds.

277. The need for individualized inquiry to determine proposed class members' platform choices affects the assessment of impact and damages in Plaintiffs' theory of harm. As explained further in Section 7.2, the effect of the alleged PMFN on any given publisher depends on the publisher's distribution choices in the actual and but-for worlds. This means that without individualized inquiry into distribution options and decisions, Dr. Schwartz cannot evaluate the effect of the alleged PMFN.
278. Therefore, the limitations of the available data in understanding publishers' distribution decisions in the actual and but-for worlds I have described above show that there is no class-wide evidence of injury and that individualized inquiry is necessary to establish injury to any particular member of the proposed class.

advertising-for-search-marketers, accessed on May 2, 2024 ("In addition, we partner with Yahoo to sell Xbox Console Display ads.").

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7. ASSESSING THE EFFECT OF VALVE’S ALLEGED PMFN ON PUBLISHERS WOULD REQUIRE INDIVIDUALIZED INQUIRY

279. Plaintiffs and their experts claim that Valve uses its alleged monopoly power to enforce a PMFN that restricts the prices and content that publishers on Steam can offer on competing platforms.⁴⁸⁶ To support this claim, Dr. Schwartz cites the Steam Distribution Agreement (“SDA”) (for content parity), a selection of emails between Valve employees and publishers (for content and price parity), and language that publishers agree to when requesting Steam keys (for price parity).⁴⁸⁷ Dr. Schwartz then claims that, absent the alleged PMFN, publishers would offer lower prices or additional content on platforms that charge lower fees.⁴⁸⁸
280. The alleged PMFN is essential to Plaintiffs’ claim that Valve charges a supracompetitive revenue share to all proposed class members.⁴⁸⁹ Plaintiffs claim that by preventing publishers from offering lower prices and additional content on lower-fee platforms, the alleged PMFN impacts publishers in two ways:
- a. Plaintiffs claim that the alleged PMFN impacts publishers *directly* by preventing publishers from offering lower prices on lower-fee platforms to increase profits.⁴⁹⁰
 - b. Dr. Schwartz assumes that, absent the alleged PMFN, additional competitive pressure would lead to lower revenue shares industry-wide. Plaintiffs rely on this

⁴⁸⁶ Schwartz Report, ¶ 150 (“Valve ensures parity both in terms of the content included in games and prices.”); Complaint, ¶¶ 12–13 (“Valve interprets and enforces its PMFN to mandate that the publisher cannot sell that version in other stores for a cheaper price, even when the competing store has a much lower commission. Valve thus prevents the game publisher from selling at a lower price on the alternative store, even when the version to be sold has no connection to the Steam platform, and thus effectively blocks all price competition. Valve’s PMFN harms the entire industry by removing the ability of competitive forces to drive lower commissions and lower prices. Absent Valve’s PMFN, competitive forces would put downward pressure on Valve’s bloated 30% commission due to game publishers selling games for less on stores that charge lower commissions. Those competitive pressures would force Valve to lower its commission in an effort to compete on price with its rivals. That would promote competition and lead to overall lower prices, benefiting game publishers and consumers alike. But Valve’s anticompetitive PMFN blocks these benefits from occurring.”).

⁴⁸⁷ Schwartz Report, ¶¶ 155 (“Section 2.4 of Valve’s SDA requires that if a publisher distributes a game ‘through any other (non-Steam) distribution channel, and if [publisher] distributes any material DLC for the Application [(game)] through that other channel, it will deliver the DLC to Valve at the same time such that Steam Account Owners will receive comparable DLC with customers acquiring the Application [(game)] through other channels.”), 157 (“Valve also enforces price parity as part of its PMFN Policy. This policy is clearly articulated to publishers requesting Steam Keys.”); Schwartz Report, Section 5.2.

⁴⁸⁸ Schwartz Report, ¶ 203 (“Absent the PMFN Policy, other platforms could charge lower commission rates to publishers to incentivize them to join that competing platform, and the publishers could charge lower prices to entice gamers to the new platform. This could be done using lower prices or different, desirable content not available on Steam. However, due to Valve’s PMFN Policy, publishers that list on Steam cannot offer different prices—despite facing lower platform fees on those platforms—or content on other platforms.”).

⁴⁸⁹ Letter from Nicolas Siebert (Quinn Emanuel) to Nathan Buchter (Fox Rothschild), “RE: In re Valve Antitrust Litigation, Case No. 2:21-cv-00563-JCC (W.D. Wash.),” September 13, 2023, p. 2 (“Plaintiffs’ core economic theory is that Valve’s platform most-favored nations provision meant that publishers were not permitted to price their games on competing platforms for less than they did on Steam (regardless of the competing platforms’ commission), thereby eliminating any incentive for competing platforms to lower their commission, allowing Valve to maintain a supracompetitive commission itself (and resulting in higher pricing to consumers).”).

⁴⁹⁰ Schwartz Report, ¶ 169 (“Valve requires publishers on Steam to abide by its PMFN Policy, which constrains publishers from pricing a game differently or providing different content across platforms. Valve restrains publishers’ ability to set game prices and release content for games on other platforms. The PMFN Policy reduces publishers’ ability to increase both sales and revenues by providing different prices and/or content across platforms as a way of attracting customers to those platforms”); Complaint, ¶¶ 185 (“It would be in the economic self-interest of a publisher to sell its games for lower retail prices through lower-commission distributors. If another distributor charges a lower commission, the publisher could lower prices on the rival distributor, steering customers towards the rival distributor.”), 188 (“Pricing games in a uniform manner across stores with different commissions goes against the economic self-interest of game publishers, who could earn more profit by charging lower retail prices on lower-commission platforms.”).

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assumption to claim that the alleged PMFN impacts publishers *indirectly* by increasing industry-wide revenue shares.⁴⁹¹

281. In this section, I address Dr. Schwartz’s claims that the alleged PMFN restricts publishers’ pricing and content decisions (and thereby allows Valve to maintain allegedly supracompetitive revenue shares). I show that Dr. Schwartz fails to establish that Valve enforces a PMFN or that the alleged PMFN would affect publishers’ pricing and content decisions in a common manner. Instead, I find that the effect of the alleged PMFN on pricing and content decisions would vary across proposed class members, and that establishing antitrust injury from the alleged PMFN to any given publisher requires individualized proof. Therefore, Plaintiffs’ and Dr. Schwartz’s method is incapable of proving, on a class-wide basis, that the alleged PMFN caused antitrust injury to publishers by restricting their pricing and content decisions. I address Dr. Schwartz’s claims about the indirect effect of the alleged PMFN below in Section 9, in my discussion of Dr. Schwartz’s flawed claims that his methods can prove class-wide harm.
282. First, in Section 7.1, I demonstrate that empirical evidence and economic theory are inconsistent both with Valve enforcing a price PMFN and with Dr. Schwartz’s assumptions of how publishers choose prices in the actual and but-for worlds.
- a. I conduct a systematic analysis of prices for a large sample of games. My analysis finds that publishers frequently offer their games for lower prices outside of Steam than on Steam. This is inconsistent with Valve enforcing a price PMFN (Section 7.1.1). My analysis of data on nearly 26,000 games contrasts with Dr. Schwartz’s ad-hoc review of 40 Valve email chains about 17 titles, and his assertion that every publisher who requested Steam keys learned of the alleged price PMFN.
 - b. Furthermore, data on prices, economic theory, industry reports, and deposition testimony from publishers all show that, even in instances where the alleged PMFN would not affect publishers’ pricing decisions, publishers do not necessarily charge lower prices on lower-fee platforms (Section 7.1.2). This contradicts Dr. Schwartz’s assumption that, absent the alleged PMFN, publishers would uniformly steer consumers to lower-fee platforms with lower prices. Without this assumption, Dr. Schwartz cannot prove with common evidence that the alleged PMFN would cause

⁴⁹¹ Schwartz Report, ¶¶ 169 (“Valve requires publishers on Steam to abide by its PMFN Policy, which constrains publishers from pricing a game differently or providing different content across platforms. Valve restrains publishers’ ability to set game prices and release content for games on other platforms. The PMFN Policy reduces publishers’ ability to increase both sales and revenues by providing different prices and/or content across platforms as a way of attracting customers to those platforms. This limits the ability of competing platforms to grow and be effective competitors to Steam.”), 206 (“The PMFN Policy effectively forecloses the paths that entering platforms could follow to compete effectively and on the merits with Steam. One option for potential entrants would be to offer lower commission cost options for publishers to incentivize them to charge lower prices on the entering platform. This would entice both publishers and users to the platform. The PMFN Policy blocks this path. A second option would be to provide content not available on Steam to differentiate the platform. Without a PMFN, this task is, at best, a challenge. With the PMFN Policy, the pathway is blocked. With the PMFN Policy in place, Steam effectively removes both avenues of competition as options and makes the impediment to effective entry a barrier that cannot realistically be overcome.”); Complaint, ¶ 13 (“Valve’s PMFN harms the entire industry by removing the ability of competitive forces to drive lower commissions and lower prices. Absent Valve’s PMFN, competitive forces would put downward pressure on Valve’s bloated 30% commission due to game publishers selling games for less on stores that charge lower commissions. Those competitive pressures would force Valve to lower its commission in an effort to compete on price with its rivals. That would promote competition and lead to overall lower prices, benefiting game publishers and consumers alike. But Valve’s anticompetitive PMFN blocks these benefits from occurring.”).

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publishers to make different pricing decisions in the actual world than the decisions they would make in his but-for world.

283. Next, in Section 7.2, I demonstrate that Dr. Schwartz fails to show that the alleged price PMFN would cause common injury to all publishers, and that establishing antitrust injury to any given publisher requires individualized inquiry. I show that the effect of the alleged PMFN on the pricing decisions of members of the proposed class—and therefore Plaintiffs’ and their experts’ ability to establish and measure antitrust injury from the alleged PMFN—requires individualized inquiry.

- a. Plaintiffs’ evidence suggests that any enforcement of the alleged PMFN is sporadic and depends on the context. Dr. Schwartz claims that sporadic enforcement of the alleged PMFN against a few publishers could affect the pricing decisions of all publishers. He claims that Valve uses enforcement against a few large publishers to signal that it will enforce the alleged PMFN against all publishers.⁴⁹² However, record evidence shows that individual publishers were unaware of the alleged PMFN, which is inconsistent with common effects. Because many publishers are not aware of the alleged PMFN unless Valve allegedly contacts them (which Dr. Schwartz only shows evidence of for 17 titles), sporadic enforcement of the alleged PMFN would not affect the pricing decisions of all publishers in the proposed class (Section 7.2.1).
- b. A publisher’s injury from the alleged conduct depends on the context. Assessing antitrust injury requires individualized inquiry into each instance of alleged enforcement. In particular, it requires an analysis of whether Valve had a procompetitive justification for allegedly restricting prices on competing platforms, and whether that procompetitive justification outweighed any alleged anticompetitive effects (Section 7.2.2).
- c. Even if, contrary to evidence in the record, the alleged PMFN were widely known and systematically enforced, I show that it would not necessarily restrict publishers’ pricing decisions in a common way. Publishers’ pricing decisions depend on factors such as their chosen monetization strategies, how responsive consumers are to price changes for their games, and the platforms on which they offer their games. These supply and demand factors vary across games. Assessing impact from the alleged PMFN would require individualized inquiry into these factors for each game (Section 7.2.3).

284. I then address Plaintiffs’ claims that Valve causes common injury to publishers by imposing a content PMFN that allegedly restricts the content that publishers offer on competing platforms.

- a. In Section 7.3, I show that, in addition to being able to offer lower prices on competing platforms, record evidence suggests that publishers can offer differentiated content on competing platforms.

⁴⁹² Schwartz Report, ¶ 321 (“Moreover, when Steam enforces the PMFN against some of its largest publishers, it sends a strong signal to all publishers of its willingness to take significant steps to enforce the policy. Put differently, if publishers such as [REDACTED] and others are vulnerable to punishment for violating the PMFN, no publisher is safe.”).

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b. In Section 7.4, I show that highly individualized factors influence the extent to which publishers would be impacted by the alleged requirement for content parity (if at all). For example, some publishers may prefer to offer the same content across platforms; these publishers may not be affected by the alleged restriction on content. For publishers who prefer to offer different content across platforms, whether the alleged content PMFN applies to their games depends upon context. The alleged PMFN could also affect a publisher’s decision of which content to publish. Further, some publishers may be *worse* off in a but-for world where the alleged content PMFN is removed. Establishing antitrust injury from the alleged content PMFN would require individualized inquiry into proposed class members’ business decisions and how those decisions would change (if at all) in the but-for world. Assessing antitrust injury from the alleged restrictions on content with common evidence is therefore not possible using any method offered by Plaintiffs or Dr. Schwartz.

7.1. Valve does not exercise monopoly power through an anticompetitive price PMFN

285. Dr. Schwartz claims that Valve enforces a PMFN that prevents publishers from offering lower prices and different content on lower-fee platforms.⁴⁹³ Dr. Schwartz claims that, absent the alleged PMFN, publishers would steer consumers to lower-fee platforms with low prices or different content.⁴⁹⁴

286. I address Plaintiffs’ claims that Valve enforces a content PMFN that impacts all publishers below in Sections 7.3 and 7.4. In this section, I demonstrate that empirical evidence is inconsistent with Dr. Schwartz’s claims that Valve systematically enforces a price PMFN, or that the alleged price PMFN prevents price steering and leads to increased prices.

7.1.1. Empirical evidence is inconsistent with Dr. Schwartz’s allegations of a price PMFN

287. In this section, I present empirical evidence that many publishers offer their games for lower prices outside of Steam than on Steam. This contradicts Plaintiffs’ allegations that “publishers *cannot* offer their games for lower prices elsewhere” (emphasis added).⁴⁹⁵ My systematic analysis of pricing data contrasts with Dr. Schwartz’s approach to test for the existence of a PMFN. Dr. Schwartz does not analyze data on pricing on Steam or on other platforms; instead, he relies exclusively on citations to the SDA, citations to language that publishers agree to when requesting Steam keys, and an ad-hoc review of 40 Valve email chains about 17 titles, only 18 of which were sent during the class

⁴⁹³ Schwartz Report, ¶ 150 (“Valve ensures parity both in terms of the content included in games and prices.”).

⁴⁹⁴ Schwartz Report, ¶ 168 (“Valve imposes barriers to entry through its PMFN Policy and enforcement practices. Absent these Valve-imposed barriers, other platforms could compete for publishers to join their platforms exclusively or increase the frequency with which they multihomed. Given the prevalence of comparatively lower commission rates on alternative game distribution platforms, publishers would further be incentivized to steer customers towards the distribution platform with the lowest commission rate, using lower prices or differentiated content to do so.”).

⁴⁹⁵ Complaint, ¶ 169 (“Under the Valve PMFN, publishers cannot offer their games at lower prices elsewhere, even when they are selling non-Steam versions of games.”). See also Schwartz Report, ¶ 154 (“the price parity element requires that publishers offer the same or better price on Steam than elsewhere.”).

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period.⁴⁹⁶ Because Dr. Schwartz’s analysis focuses on anecdotal evidence about a small sample of games, Dr. Schwartz cannot draw conclusions about whether all publishers can offer lower prices outside of Steam.

288. Dr. Schwartz claims that Valve’s alleged price PMFN prevents publishers from offering games at lower prices outside of Steam than on Steam.⁴⁹⁷ There are many examples that demonstrate that this is false. First, *Cyberpunk 2077*, the game with [REDACTED] on Steam in 2022, had an average price of \$47.09 on EGS in 2022, 10 percent lower than the price on Steam over the same period of \$52.10.⁴⁹⁸ Second, consider EGS free games. Every week, EGS offers a game that consumers can download and keep for free, but these games are often not free on Steam. Of the 87 free games offered on EGS in 2022 that appear in the Valve revenue data, consumers bought [REDACTED] on Steam during the period when the game was free on EGS.⁴⁹⁹

289. I test whether this pattern holds generally by analyzing data on average sale prices for a large sample of games across several platforms. I use data from the pricing aggregator website IsThereAnyDeal (“ITAD”) to compare prices between Steam and its competitors. ITAD collects pricing data directly from the stores’ websites. ITAD checks prices several times each day, and, whenever it detects a new price for a game at a store, it updates a log table for that game, which tracks the history of the game’s price changes in different stores.⁵⁰⁰ ITAD records the time, the store at which the game changed price, the base price, and the sale price. I collected data from these log tables to obtain pricing data for the analyses in this section.⁵⁰¹

290. To compare prices between Steam and other platforms in the data, I calculate the percentage of games that had lower prices at competing platforms compared to Steam. First, for each platform, I identify the set of games available on both Steam and the other platform in the ITAD data. Then, for each game, I calculate the daily average prices on Steam and on the other platform over the period when the game is available on

⁴⁹⁶ Schwartz Report, ¶¶ 155 (“Section 2.4 of Valve’s SDA requires that if a publisher distributes a game ‘through any other (non-Steam) distribution channel, and if [publisher] distributes any material DLC for the Application [(game)] through that other channel, it will deliver the DLC to Valve at the same time such that Steam Account Owners will receive comparable DLC with customers acquiring the Application [(game)] through other channels.’”), 157 (“Valve also enforces price parity as part of its PMFN Policy. This policy is clearly articulated to publishers requesting Steam Keys.”). Dr. Schwartz cites to 40 Valve email chains in Section 5 of his report. These include internal emails allegedly discussing PMFN enforcement and emails between Valve employees and publishers. When discussing these emails, Dr. Schwartz mentions 17 games. In addition to the 40 Valve email chains that Dr. Schwartz cites in Section 5 of his report, Dr. Schwartz also cites to two internal [REDACTED] emails produced in this matter. See Workpaper 38.

⁴⁹⁷ Schwartz Report, ¶ 154 (“Valve’s PMFN Policy includes two elements: content parity and price parity. The content parity element requires that publishers provide the same or better game content on Steam than elsewhere. Similarly, the price parity element requires that publishers offer the same or better price on Steam than elsewhere.”).

⁴⁹⁸ There are other examples of [REDACTED] games that were cheaper on EGS than on Steam. *Red Dead Redemption 2*, the game with [REDACTED] on Steam in 2022, had an average price on EGS that was 3 percent lower than the average price on Steam in 2022. *Cities: Skylines*, the game with [REDACTED] on Steam in 2022, had an average price on EGS that was 23 percent lower than the average price on Steam in 2022. See Workpaper 39.

⁴⁹⁹ Workpaper 40. I identified which games were offered for free on EGS using an article from PC Gamer. See Morgan Park, “What’s free on the Epic Games Store right now?” *PC Gamer*, available at <https://www.pcgamer.com/epic-games-store-free-games-list/>, accessed on December 6, 2023.

⁵⁰⁰ IsThereAnyDeal, “Update Status,” available at <https://isthereanydeal.com/status/>, accessed on April 19, 2024. For example, ITAD checks U.S. prices for the Epic Game Store every 46 minutes. See IsThereAnyDeal, “Epic Games Store Status,” available at <https://isthereanydeal.com/status/shop/16/>, accessed on April 19, 2024.

⁵⁰¹ See Appendix Section 18 for more details on the ITAD data.

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both platforms. Then I calculate the percentage of games with average prices that are at least 5 percent lower on the competing platform compared to Steam. I use this measure to test for the effect an alleged PMFN would have. If the average price for a game on a competing platform is lower than the average price on Steam, then the game must have been discounted on the competing platform more often, or the game must have been offered at a deeper discount on the competing store. Either of these would be evidence against a PMFN.⁵⁰² I use this measure to compare prices on Steam and competing platforms for 25,723 games.⁵⁰³

291. I calculate average prices by weighting the price offered to consumers by the number of days that price is offered. This returns a weighted average of prices on days when a game was offered for its base price and on days when a sales event occurred. Capturing sale prices as well as base prices is important; many transactions on Steam occur when games are on sale, with ■ percent of all units sold on Steam in 2022 occurring when the transacted price was lower than the base price.⁵⁰⁴ This weighted average price is my preferred measure of average prices for this analysis because it captures a publisher’s decision of which price to offer instead of a consumer’s decision of whether to purchase at that price.⁵⁰⁵
292. Exhibit 19 presents the percentage of games that are cheaper on competing platforms compared to Steam.⁵⁰⁶ For example, 31 percent of games available on both Steam and EGS (according to the ITAD data) have an average price on EGS that is at least 5 percent lower than the average price on Steam during the period when the game is available on both platforms. As another example, 23 percent of games available on both the Ubisoft Store and Steam are at least 5 percent cheaper on the Ubisoft Store. The pattern of lower prices also holds for stores that specialize in indie titles: 28 percent of games offered on both itch.io and Steam are at least 5 percent cheaper on itch.io.

⁵⁰² This measure is conservative because it does not capture games that had a lower minimum price outside of Steam, but that had lower prices on Steam on average. I present a version of Exhibit 19 that calculates the percentage of games that had a lower minimum price outside of Steam in Exhibit 26.

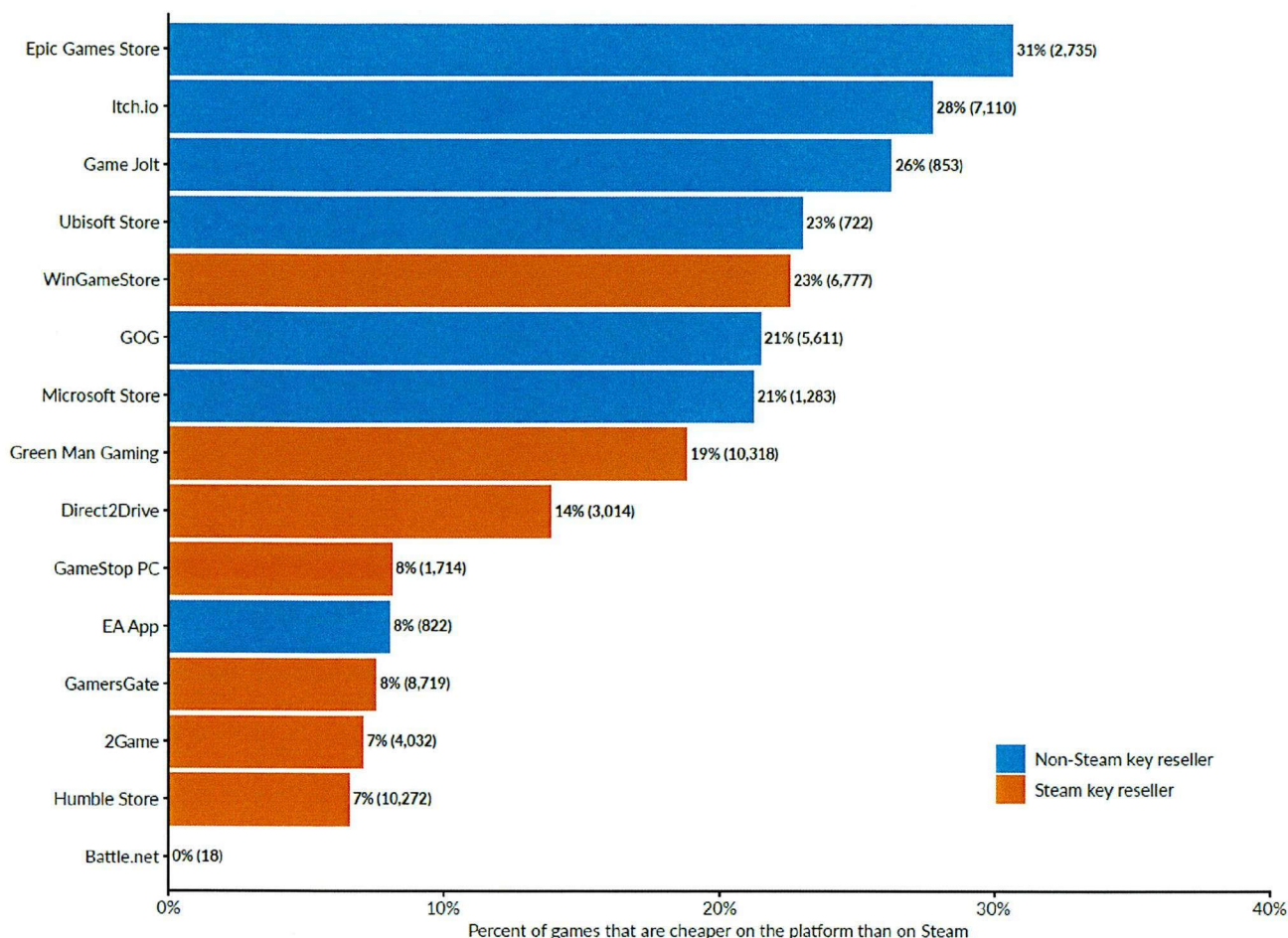
⁵⁰³ See Exhibit 19.

⁵⁰⁴ Workpaper 6. See Section 2.1.3 above for more discussion of sales prices.

⁵⁰⁵ Measuring daily average offered price as opposed to transacted price allows me to analyze the effect of the alleged PMFN on the price publishers offer to consumers, regardless of whether there was demand at that price. This allows me to test Plaintiffs’ claims about the alleged PMFN, which are about restrictions on publishers’ pricing decisions. Note that Dr. Schwartz uses a similar measure of prices when he assesses publishers’ pricing behavior in his pass-through analysis. See Schwartz Report, ¶¶ 391–393 (“I use these data to construct daily summaries, by package, that reflect the weighted average price of transactions on a given day using only data entries that reflect net positive transaction amounts and revenues ... using the daily weighted average transaction prices described above, I calculate the average effective daily price over the 360 days preceding the commission rate reduction and the first 360 days following the commission rate reduction.”); Schwartz Deposition, pp. 227–228 (“Q. In paragraph three hundred ninety-five, you report the averages; correct? A. I report average and median price changes in the narrative and then in figure eight. Q. So why did you use averages instead of the actual prices, price changes? A. I have one hundred some-odd observations. In order to come to some measure of central tendency across those hundred and some-odd observations where I’m going to get different behavior, I need to use some measure of central tendency. It’s the only way to derive any meaning from a large set of data where everybody is behaving somewhat differently and be able to make generalizations.”).

⁵⁰⁶ Exhibit 19 presents this statistic for the stores in the ITAD data that Dr. Schwartz and Professor Rietveld mention in their reports. Results are similar when I include all stores in the data in Exhibit 27. Exhibit 28 presents this statistic for a sample of the most popular games on Steam and returns similar results.

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Exhibit 19**Many games are at least 5 percent cheaper outside of Steam**Source: *IsThereAnyDeal*

Note: There are 25,723 distinct games included in this analysis. For any particular game, the average prices on Steam and the other platform are calculated as the average daily prices over the period when the game is available on both Steam and the other platform. Daily prices on each platform are obtained from the price changes recorded in the ITAD data between the first price change until the last price change recorded. See Appendix Section 18 for details. The number of games included when comparing Steam prices to each other platform is in parentheses next to the bar. The data is filtered through the end of 2022.

293. Games are often cheaper on key resale sites as well. Steam key resellers are indicated in orange in Exhibit 19.⁵⁰⁷ For example, 19 percent of the games available on both Steam and Green Man Gaming are at least 5 percent cheaper on Green Man Gaming during the period when games are available on both.⁵⁰⁸

⁵⁰⁷ While these resellers primarily offer titles through Steam keys, they also offer keys for other platforms such as GOG. See Humble Bundle, “What Is Humble Bundle?” available at <https://www.humblebundle.com/about>, accessed on April 17, 2024 (“When you purchase something on Humble Bundle, you’ll get a key to redeem on Steam, Ubisoft Connect Desktop App, GOG, or another platform.”).

⁵⁰⁸ Note that more games have average prices on competing stores that are at least 1 percent lower than the average price for that game on Steam. For example, 36 percent of the games in the data that are available on both Steam and Green Man Gaming have an average price on Green Man Gaming that is at least 1 percent lower than the average price on Steam during the period that the game is available on both platforms. See Exhibit 29.

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294. Almost every store in the sample has games that have an average price that is at least five percent lower than the average price on Steam. This evidence is inconsistent with Valve enforcing a price PMFN. Note that this is true for Steam key resale sites, even though Valve provides Steam keys to publishers for free, and therefore has a procompetitive justification for restricting prices on Steam keys.⁵⁰⁹
295. As another test of whether publishers offer games for lower prices outside of Steam, I analyze patterns in sales events across platforms. In Appendix Section 14.2, I present an analysis of sales events on and outside of Steam. I show that, contrary to Plaintiffs’ and their experts’ claims, many sales events on other platforms are not offered on Steam, and sales events on other platforms often offer larger discounts than sales events on Steam around the same time. This evidence contradicts the existence and class-wide enforcement of an alleged price PMFN.
296. The analysis in this section and my analysis of sales events in Appendix Section 14.2 likely *underestimates* the discounts offered on competing platforms because they examine prices only for standalone games. In addition to selling games individually, publishers can choose to sell their games in bundles, or as part of subscriptions. Bundles and subscriptions are often offered for much lower prices than individual games:
- a. Publishers can choose to sell their games as part of a bundle with other games. Such bundles are commonly comprised of Steam keys and are often sold at steep discounts.⁵¹⁰ For example, consumers could buy the “IGN Editors’ Choice Bundle”—a collection of seven different games—on Humble Bundle for \$16, even though “the MSRP of all of these games and perks adds up to around \$204.”⁵¹¹ Data on bundle prices from ITAD shows that bundles on competing storefronts are heavily discounted relative to Steam prices for individual games.⁵¹² For nearly all (98 percent) of the bundles in the data, it is more expensive to buy the games individually on Steam than buying the bundle from a competing storefront. The discounts are steep—these bundles are, on average, 93 percent cheaper than buying

⁵⁰⁹ See Section 7.2.2 below for more discussion of Valve’s procompetitive justification for restricting the prices of Steam keys.

⁵¹⁰ Jon Bitner, “Every Steam Game Bundle You Can Buy Now At Fanatical And Humble,” *GameSpot*, April 26, 2023, available at <https://www.gamespot.com/gallery/every-steam-game-bundle-you-can-buy-now-at-fanatical-and-humble/2900-4726/>, accessed on December 18, 2023 (“Looking to snag a bunch of games without dropping a bunch of cash? Then you’ll want to check out the latest bundles from Humble and Fanatical—which give you a chance to score dozens of games for just a few bucks. There’s even an intriguing Mystery Egg Bundle that pulls together up to 20 mystery Steam keys for \$13.49 (which is great if you’re in the mood for a surprise) ... As for Humble, many of its bundles allow you to ‘pay what you want,’ making it easy to add a handful of games to your collection for just a few bucks. Every game you get in these bundles is a Steam key.”).

⁵¹¹ Eric Song, “Score 7 Amazing Games the IGN Editors’ Choice Bundle from Humble Bundle,” *IGN*, November 1, 2023, available at <https://www.ign.com/articles/humble-bundle-ign-editors-choice-9-and-above-club>, accessed on May 6, 2024 (“These games include: Disco Elysium: The Final Cut, Wildermyth, Chivalry 2, Spiritfarer: Farewell Edition, GRIME, The Forgotten City, Paradise Killer. In addition to all of the games above, you get three free months of IGN Plus membership (normally \$5 a month). The IGN Plus membership entitles you to ad-free IGN browsing, new free games and loot every month, special discounts and offers from IGN partners, and unlimited access to MapGenie in-game maps. You also get a free voucher for \$10 off (almost) anything at the IGN Store. Save on t-shirts, collectible figures, and toys from all your favorite games and shows. This is a ‘Pay What You Want’ Humble Bundle. The minimum price for the bundle is \$16, which is a phenomenal deal considering the MSRP of all of these games and perks adds up to around \$204. You can pay more if you want and the extra funds will go towards helping out the developers, Humble, and charity. All of the games in this bundle are available on Steam for Windows, and some for Mac.”).

⁵¹² Along with tracking prices for individual games, ITAD tracks prices for bundles offered on certain platforms. This data does not include bundles offered on Steam, so I do not incorporate this data on bundles into my analyses in Section 7 and Appendix Section 14. See Appendix Section 18.4 for details on these data.

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all the games in the bundle individually on Steam.⁵¹³ Bundles are often offered for such low prices that in many instances (58 percent of all games that appear in the ITAD bundle data), it is more expensive to buy one game individually on Steam than buying an entire bundle containing that game on a competing storefront.⁵¹⁴

- b. Publishers can also offer their games as part of subscription services such as Microsoft’s PC Game Pass.⁵¹⁵ Such subscriptions can offer customers a steep discount as compared to buying games outright, depending on user’s gameplay habits. For example, on October 20, 2022, PC Game Pass cost \$9.99 per month and included 445 games.⁵¹⁶ ITAD contains pricing data on Steam for 343 of these games. Of these 343 games, 86 percent had a price that was greater than the cost of one month of PC Game Pass. It would have cost \$8,264 to buy all 343 of these games on Steam on October 20, 2022.⁵¹⁷

297. Under Dr. Schwartz’s theory of harm, the alleged PMFN should rarely make games available for a lower price outside of Steam than on Steam. The fact that any—let alone many—games are available for a lower average price outside of Steam is evidence that Valve either does not impose or does not enforce a price PMFN.⁵¹⁸ However, prices are not always highest on Steam; my analysis in Section 7.2.3 below shows that games are sometimes available at lower prices on Steam than other platforms.⁵¹⁹ In the next section, I show that empirical evidence is inconsistent with Dr. Schwartz’s claim that, absent an alleged PMFN, publishers would charge lower prices on and steer consumers to platforms with lower revenue shares.

7.1.2. Publishers do not necessarily charge lower prices on platforms with lower revenue shares

298. Dr. Schwartz’s theory of harm relies on the assumption that, if not for Valve’s alleged PMFN, publishers would consistently offer lower prices on lower-fee platforms (i.e., those that set lower revenue shares). Dr. Schwartz claims that it is in publishers’ best interest to sell their games at lower prices on lower-fee platforms in order to steer

⁵¹³ Workpaper 41. Note that, while Steam offers some bundles, they are less prevalent on Steam and are much lower than bundle discounts on other platforms. The average percentage discount for a bundle on Steam is 65 percent. See Workpaper 42.

⁵¹⁴ Workpaper 43.

⁵¹⁵ Rich Stanton, “Xbox chief reveals more about how developers earn money through Game Pass,” *PC Gamer*, November 25, 2020, available at <https://www.pcgamer.com/xbox-chief-reveals-more-about-how-developers-earn-money-through-game-pass/>, accessed on April 20, 2024 (“A major part of Microsoft’s current Xbox strategy rests on Game Pass, a premium subscription service that runs cross-platform. It’s so important that one of the big questions about Xbox’s new hardware has been whether it’s worth the outlay when that ecosystem, more or less, is now on PC. It’s a fascinating gamble, with potentially huge returns, and its success depends on whether Microsoft can build a platform attractive enough to developers and, in turn, players.”).

⁵¹⁶ Xbox, “PC Game Pass,” available at <https://web.archive.org/web/20221020230423/https://www.xbox.com/en-US/xbox-game-pass/pc-game-pass>, accessed on May 13, 2024 (“Subscription continues automatically at \$9.99/mo.”). For a list of games, see Eddie Makuch et al., “All The Xbox Game Pass Games Right Now,” *GameSpot*, October 20, 2022, available at <https://web.archive.org/web/202210202075813/https://www.gamespot.com/articles/all-the-xbox-game-pass-games-right-now/1100-6448286/>, accessed on May 13, 2024.

⁵¹⁷ Workpaper 44.

⁵¹⁸ Dr. Schwartz assumes that selective enforcement of the alleged PMFN would restrict prices for all publishers. This assumption is inconsistent with the data, which show that publishers often offer lower prices outside of Steam than on Steam. I discuss Dr. Schwartz’s assumption about selective enforcement further in Section 7.2.1 below.

⁵¹⁹ See Exhibit 21.

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consumers to these platforms.⁵²⁰ In this section, I show that publishers do not necessarily charge lower prices on platforms with lower revenue shares: I show that, for a set of games that are *not* subject to Plaintiffs’ alleged PMFN, publishers charge a variety of prices that may be lower or higher across different platforms. This pricing behavior is inconsistent with the price-steering behavior that Dr. Schwartz assumes (without evidence) that publishers engage in. I then show that Dr. Schwartz’s assumption of price-steering behavior is at odds with economic theory, industry reporting on video game pricing, and deposition testimony from publishers.

299. I empirically test whether publishers engage in price-steering strategies by comparing prices across different platforms for games that are unaffected by an alleged PMFN. I examine the prices of Ubisoft games launched only on EGS and Ubisoft’s own platform, Ubisoft Connect. Shortly after the launch of EGS in late 2018, Ubisoft announced that it would no longer launch games on Steam; rather, Ubisoft would release new games exclusively on EGS and on Ubisoft Connect.⁵²¹ EGS charges a 12 percent revenue share, and Ubisoft pays no revenue share for sales on Ubisoft Connect. By comparing pricing on Ubisoft Connect and EGS when Ubisoft games were unavailable on Steam, I can analyze pricing strategies across platforms for games that could not have been affected by Valve’s alleged PMFN. If Ubisoft engages in the form of price-steering behavior that Dr. Schwartz claims is commonplace among publishers, then Ubisoft should systematically offer lower prices on the lower-fee platform.
300. I find that the relationship between prices on Ubisoft Connect and EGS varies across Ubisoft games that were not available on Steam (and therefore unaffected by the alleged PMFN). For each of the 11 Ubisoft games available exclusively on EGS and Ubisoft Connect in my data sample, I calculate the average prices on EGS and on Ubisoft Connect during the period when each game was available on both stores but unavailable on Steam.⁵²² Then I calculate the ratio of the average price on EGS and the average price on Ubisoft Connect for each game. Exhibit 20 presents these ratios. 4 out of 11 games have an average price on EGS that is lower than on Ubisoft Connect, while the other 7

⁵²⁰ Schwartz Report, ¶ 203 (“Absent the PMFN Policy, other platforms could charge lower commission rates to publishers to incentivize them to join that competing platform, and the publishers could charge lower prices to entice gamers to the new platform. This could be done using lower prices or different, desirable content not available on Steam. However, due to Valve’s PMFN Policy, publishers that list on Steam cannot offer different prices—despite facing lower platform fees on those platforms—or content on other platforms.”). See also Complaint, ¶¶ 185 (“It would be in the economic self-interest of a publisher to sell its games for lower retail prices through lower-commission distributors. If another distributor charges a lower commission, the publisher could lower prices on the rival distributor, steering customers towards the rival distributor.”), 188 (“Pricing games in a uniform manner across stores with different commissions goes against the economic self-interest of game publishers, who could earn more profit by charging lower retail prices on lower-commission platforms.”). That is, if there were a PMFN and if revenue shares on Steam were supracompetitive, Plaintiffs’ theory implies that publishers would want prices on Steam to be as close as possible to prices outside of Steam.

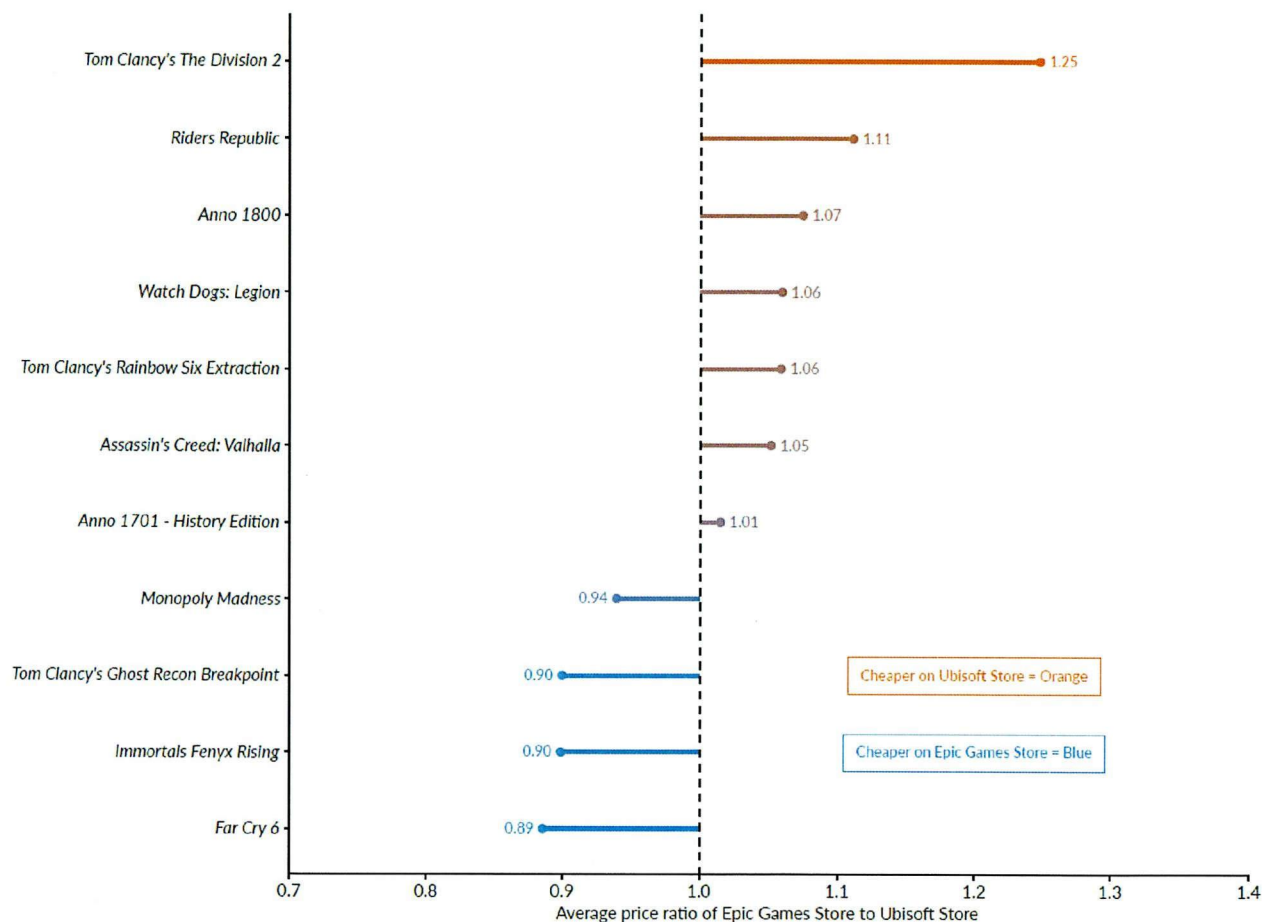
⁵²¹ Kyle Orland, “Ubisoft comes crawling back to Steam after years on Epic Games Store,” *Ars Technica*, November 22, 2022, available at <https://arstechnica.com/gaming/2022/11/ubisoft-comes-crawling-back-to-steam-after-years-on-epic-games-store/>, accessed on April 17, 2024 (“Since early 2019, Ubisoft has made a point of moving its PC releases away from Steam and toward the Epic Games Store and its own Ubisoft connect platform.”); Eddie Makuch, “Ubisoft Explains Why It Doesn’t Release Games On Steam,” *GameSpot*, August 29, 2019, available at <https://www.gamespot.com/articles/ubisoft-explains-why-it-doesnt-release-games-on-st/1100-6469502/>, accessed on April 19, 2024 (“It was a business decision to not put new releases on Steam and focus on the Epic Store and Ubisoft Store,” the spokesperson said.”).

⁵²² I identify Ubisoft games using a list maintained by Giant Bomb. See Giant Bomb, “Ubisoft Entertainment,” available at <https://www.giantbomb.com/ubisoft-entertainment/3010-82/published/>, accessed on April 19, 2024. This list includes 50 games released since 2019, 17 of which are available on EGS and unavailable on Steam. I have pricing data from ITAD for both EGS and Ubisoft Connect for 11 of these games. See Workpaper 45.

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games have an average price that is higher on EGS than on Ubisoft Connect. That is, Ubisoft does not systematically offer lower prices on the lower-fee platform.

301. The variation I observe across games and the lack of observable, systematic evidence of price-steering behavior is at odds with Dr. Schwartz's price-steering theory. In reality, Ubisoft might consider many factors unrelated to revenue share when choosing prices on EGS and its own platform, as discussed below.

Exhibit 20***Prices across EGS and Ubisoft Connect vary substantially***

Source: *IsThereAnyDeal*

Note: For any particular game, the average prices on EGS and Ubisoft Store are calculated as the average daily prices over the period when the game is available on both stores and unavailable on Steam. The ratio is calculated as EGS's price over Ubisoft Store's price. Hence, games to the left had a lower average price on EGS, and games on the right had a higher average price on EGS. Data on pricing on the Ubisoft Store for the standard edition of *Immortals Fenyx Rising* and *Tom Clancy's Rainbow Six Extraction* are unavailable, so I report prices for *Immortals Fenyx Rising Gold Edition* and *Tom Clancy's Rainbow Six Extraction Deluxe Edition*. ITAD does not track Ubisoft Store prices for two Ubisoft games that were released on the Ubisoft Store and EGS, but not Steam. These are *The Crew Motorfest* and *The Settlers: New Allies*. Ubisoft also released free-to-play games on Ubisoft Store and EGS, but not on Steam. These include *Might & Magic: Chess Royale*, *Trackmania*, and *Roller Champions*.

302. These results are consistent with the economic theory I summarized in Section 2.1.4 above. In industries with differentiated products such as video games, pricing is driven by both the costs that publishers face to distribute a game and the game's demand elasticity, that is, how responsive consumers are to price changes for their games. Consequently, differences in costs due to different revenue shares are *not* sufficient to

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determine how publishers choose prices across platforms. Dr. Schwartz’s theory of harm ignores the importance of demand elasticity for video game pricing and instead assumes that publishers choose prices based only on costs. Dr. Schwartz’s assumption leads to his conclusion that, absent the alleged PMFN, publishers would consistently offer lower prices on lower-fee platforms.⁵²³ This assumption is inconsistent with the data, which show that publishers consider additional factors unrelated to revenue share when choosing prices. Determining how revenue shares affect pricing for different publishers requires individualized inquiry into these factors.

303. Evidence from a longstanding industry publication is also inconsistent with Plaintiffs’ price-steering assumptions. An analysis by Ars Technica examined whether publishers offered lower prices on stores with lower revenue shares and concluded that game prices are inconsistent with publishers engaging in price-steering behavior or the presence of a PMFN enforced by Valve. For example, the report found that the base prices for *Watch Dogs: Legion* and *Anno 1800* are the same on Ubisoft Connect and EGS. The same analysis found that in a sample of 41 EGS-exclusive games that were on both EGS (which charges a 12 percent revenue share) and console stores (which charge a 30 percent revenue share), only five were offered for a lower base price on EGS. The rest of the games had the same base price, and eight were cheaper on console because they were on sale.⁵²⁴ This is consistent with deposition testimony showing that some publishers prefer to offer the same price across platforms. I discuss this testimony in Section 7.2.3.

304. Consistent with these results, publishers have testified that they consider factors besides revenue shares when setting prices. These include supply factors such as the “cost of investment to develop the game” and whether the game has “a lasting revenue stream.”⁵²⁵ Pricing also depends on demand factors, including where a game is in its life

⁵²³ Schwartz Report, ¶¶ 170–171 (“Consider, for example, a publisher who offers a game on both Steam and an alternative distribution platform and would like to offer lower pricing on another platform. Assume the publisher’s effective commission rate is 30% for sales on Steam and 12% for sales on the alternative distribution platform. This difference in commission rates may create an incentive for the publisher to charge a lower price on the alternative platform to drive interest and sales, as it can maintain revenue levels given it retains a larger share of revenues on each sale on that platform. So, if the price for the game on Steam is \$10, the publisher could earn equal revenues on the alternative distribution platform by pricing the game at \$7.95. Applying basic economic principles to this hypothetical situation results in the conclusion that the publisher could both (a) sell more copies of its game on the alternative distribution platform by offering a lower price and (b) earn more or equivalent revenues for any sale on the alternative distribution platform when compared to an identical sale on Steam. Valve’s PMFN Policy prevents publishers from engaging in this pricing behavior, hampering rival platforms’ ability to compete with Steam.”).

⁵²⁴ Kyle Orland, “Steam’s ‘price parity rule’ isn’t wreaking havoc on game prices,” *Ars Technica*, May 13, 2021, available at <https://arstechnica.com/gaming/2021/05/why-lower-platform-fees-dont-lead-to-lower-prices-on-the-epic-games-store/>, accessed on December 8, 2023 (“Regardless, even if we remove Steam’s alleged price-fixing from the equation, publishers still seem reluctant to pass on the savings from the EGS’s lower cut. This is apparent when you look at the Epic Games Store PC exclusives that are also sold on consoles, where the platform holders each take their own 30 percent cut. An Ars analysis found that out of 41 such games, only five were offered for a lower price on the EGS. The rest of the games were priced identically on PC and console, except for eight that were actually cheaper on console thanks to a temporary sale. Again, publishers largely aren’t lowering their prices even though Epic has lowered its relative platform cut. The same phenomenon remains true even if we take consoles out of the equation. Since early 2019, Ubisoft’s new PC games have avoided Steam in favor of distribution on the EGS and Ubisoft’s Uplay platform. But even though Ubisoft doesn’t pay any platform fees for games sold through Uplay, the prices for games like *Watch Dogs: Legion* and *Anno 1800* are the same across Uplay and the EGS. Ubisoft isn’t interested in ‘passing on the savings’ from avoiding the EGS’s 12 percent cut in these cases, even though doing so would likely make Uplay a significantly more appealing option for cost-conscious players.”).

⁵²⁵ ■ Deposition, pp. 187 (“Q. So you said before you needed to know more than just the revenue, you needed to know how many people are playing the game. If you as a game developer are making a pricing decision, assuming all else is equal on these games, wouldn’t you price the game at a lower level to get more revenue and more customers playing the game? ... A. There’s way

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cycle. For example, pricing of a game might “be dependent on if there’s a sequel in that series” and that it “could be advantageous to drop the price a lot before there’s a sequel so that more people are attracted and the game is fresh in mind to play the second one.”⁵²⁶ Both [REDACTED] from [REDACTED] and Named Plaintiff Wolfire testified that pricing depends on the price of similar games.⁵²⁷ Importantly, “revenue is definitely not the dominating factor” when setting prices for games.⁵²⁸

305. Professor Rietveld agrees that publishers consider factors besides revenue share when setting prices. These include supply conditions such as what publishers “spend on making the game” and demand conditions including “how many units they would sell.” It might also depend on pricing structures mandated by platforms.⁵²⁹
306. Finally, even if publishers did systematically offer lower prices on lower-fee platforms, it is not clear that consumers would choose to buy from these platforms. Empirical evidence demonstrates that consumers do not always buy games where they are cheapest; when games are free on EGS, some consumers still chose to buy those games on Steam.⁵³⁰ One reason that publishers might not be able to steer consumers using prices is that, as discussed in Section 5.1, Steam has features that consumers value and that competing platforms lack. Dr. Schwartz does not address the different factors that

too many factors that go into how revenue is generated. And there’s way too many things that I care about aside from -- of course, from a strictly revenue standpoint, more revenue is better. But there’s -- like what was the business model? Is it a lasting revenue stream?”, 188–189 (“Q. ... [REDACTED], as a game developer, what considerations do you take into pricing a game? A. The profitability, there’s a certain cost of investment to develop the game, and, generally, want to make more than that cost in the long run.”).

⁵²⁶ [REDACTED] Deposition, pp. 187 (“Q. So you said before you needed to know more than just the revenue, you needed to know how many people are playing the game. If you as a game developer are making a pricing decision, assuming all else is equal on these games, wouldn’t you price the game at a lower level to get more revenue and more customers playing the game? ... A. There’s way too many factors that go into how revenue is generated. And there’s way too many things that I care about aside from -- of course, from a strictly revenue standpoint, more revenue is better. But there’s -- like what was the business model? Is it a lasting revenue stream? What does the next 18 months look like? Do -- are players happy with the way they were charged? There’s so many different things that I would factor in and some -- and revenue is definitely not the dominating factor to me.”), 188–189 (“Q. ... [REDACTED], as a game developer, what considerations do you take into pricing a game? A. The profitability, there’s a certain cost of investment to develop the game, and, generally, want to make more than that cost in the long run. The value to customers that they’re receiving should feel like they’re getting the right value. And it’s -- it’s truly case-by-case specific. Like over the life span of a game, how we might price something might, for example, be dependent on if there’s a sequel in that series, could be advantageous to drop the price a lot before there’s a sequel so that more people are attracted and the game is fresh in mind to play the second one, for example. Q. You said one of the things you take into consideration is the cost of developing the game and recouping that cost; is that fair? A. Yes.”).

⁵²⁷ [REDACTED] Deposition, p. 84 (“Q. Does -- when [REDACTED] pricing a game, does it look at what competitive games are priced at? ... A. I think it’s -- it’s inherent in all of our knowledge of the video game industry.”); Rosen, David Deposition, p. 220 (“Q. I believe that Overgrowth was originally priced at 29.95. Does that sound right? A. That sounds right. Q. How did you come up with that 29.95 price? ... [A]: We would probably have looked at other games from different studios of various sizes and their production values and the amount of time put into them and tried to figure out what seemed like it would fit in with them.”).

⁵²⁸ [REDACTED] Deposition, p. 187 (“Q. So you said before you needed to know more than just the revenue, you needed to know how many people are playing the game. If you as a game developer are making a pricing decision, assuming all else is equal on these games, wouldn’t you price the game at a lower level to get more revenue and more customers playing the game? ... A. There’s way too many factors that go into how revenue is generated. And there’s way too many things that I care about aside from -- of course, from a strictly revenue standpoint, more revenue is better. But there’s -- like what was the business model? Is it a lasting revenue stream? What does the next 18 months look like? Do -- are players happy with the way they were charged? There’s so many different things that I would factor in and some -- and revenue is definitely not the dominating factor to me.”).

⁵²⁹ Rietveld Deposition, p. 106 (“Q. Are you able to identify factors that publishers might consider when setting the price of a game? A. So I’ve not studied this, but one could identify such factors. Q. Go ahead. A. Generally I would believe that the developer takes into consideration what they spend on making the game in combination with some projection of how many units they would sell. On some platforms there are possible price points set by the platform company. It would be either one of those price points but not in between.”).

⁵³⁰ Of the 87 free games offered on EGS in 2022 that appear in the revenue data produced by Valve, consumers bought [REDACTED] copies for [REDACTED] during the period when the game was free on EGS. See Workpaper 40.

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affect consumer behavior, and instead assumes that publishers would attempt to steer consumers to lower-fee platforms absent the alleged PMFN, and that such a strategy would be effective.

307. In sum, Plaintiffs’ price-steering theory is inconsistent with the data, industry reporting, deposition testimony of publishers, and economic theory. Determining the extent to which revenue shares affect the pricing decisions of each publisher requires individualized inquiry into the supply and demand conditions that each game faces.

7.2. Whether the alleged price PMFN would impact publishers depends on individualized factors

308. In the previous section, I showed (a) that empirical evidence contradicts the claim that Valve enforces a price PMFN, and (b) that the prices individual publishers charge do not uniformly vary with the revenue share they pay and therefore would not necessarily be affected by an alleged PMFN. In this section, I demonstrate that whether each publisher would be impacted by the enforcement of the alleged PMFN depends on factors specific to each publisher, and that assessing these factors requires individualized inquiry. These results are at odds with Dr. Schwartz’s analysis of the alleged PMFN, in which he assumes, rather than demonstrates, that the alleged PMFN causes common antitrust injury to all publishers.⁵³¹

7.2.1. Individual publishers were unaware that the alleged PMFN existed, which is inconsistent with common impact

309. As discussed in Section 7.1.1 above, Plaintiffs’ experts provide proposed evidence of only sporadic enforcement of the alleged PMFN, specifically through conversations in emails. In support of his claim that this sporadic enforcement could cause class-wide antitrust injury, Dr. Schwartz assumes that this sporadic enforcement affected all publishers’ pricing decisions.⁵³² His claim relies on the assumption that “publishers, including the largest publishers in the PC game industry, are aware of Valve’s parity requirements.”⁵³³ Dr. Schwartz asserts that, although the alleged PMFN is enforced only sporadically and for only a few publishers, all publishers nonetheless follow pricing restrictions.⁵³⁴ Dr. Schwartz admitted in his deposition that, in order for the alleged PMFN to affect prices class-wide, “there have to be enough publishers to know about it

⁵³¹ See Section 9 below for a discussion of how Dr. Schwartz cannot causally establish that the alleged PMFN caused antitrust injury to any proposed class members, let alone commonly for all proposed class members.

⁵³² Schwartz Report, ¶ 320 (“Valve’s PMFN Policy enforcement has reduced platform competition. By blocking the emergence of viable alternative platforms, all publishers were denied the opportunity to utilize those alternative platforms—not only those who faced direct enforcement. This view misses the practical impact of even selective enforcement as a signaling device and as presenting a credible threat to any publisher considering violating the PMFN policy in order to charge consumers lower prices.”).

⁵³³ Schwartz Report, ¶ 166.

⁵³⁴ Schwartz Report, ¶ 320 (“By blocking the emergence of viable alternative platforms, all publishers were denied the opportunity to utilize those alternative platforms—not only those who faced direct enforcement. This view misses the practical impact of even selective enforcement as a signaling device and as presenting a credible threat to any publisher considering violating the PMFN policy in order to charge consumers lower prices.”).

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that you have substantial compliance with it such that effective entry is precluded on the part of a competing platform.”⁵³⁵

310. In this section, I show that Dr. Schwartz’s assumption that sporadic enforcement of the alleged PMFN “sends a strong signal to all publishers of [Valve’s] willingness to take significant steps to enforce the [PMFN]” is at odds with record evidence.⁵³⁶
311. Dr. Schwartz claims that enforcement of the alleged PMFN against large publishers affects the pricing decisions of all publishers. This claim relies on the assumption that many publishers were aware that Valve was allegedly enforcing a PMFN against large publishers. However, Dr. Schwartz has not provided evidence that other publishers were aware that Valve was allegedly contacting a subset of publishers about prices, that other publishers had the same information about those alleged contacts, or that other publishers changed their behavior in a common way because of those alleged contacts. For example, Dr. Schwartz cites to communications between Valve and [REDACTED] and claims that these communications are an example of enforcement against a large publisher that acts as a signal to all publishers.⁵³⁷ Dr. Schwartz’s evidence of the alleged enforcement against [REDACTED] consists entirely of emails produced in this matter.⁵³⁸ These emails are not public, and Dr. Schwartz provides no evidence that other publishers were aware of these communications with [REDACTED]
312. In support of his claim that publishers are aware of pricing restrictions even when they are not enforced, Dr. Schwartz cites four news articles, a discussion thread on Steamworks, emails between Named Plaintiff Wolfire and other indie game developers, and an interview with Wolfire’s CEO. From this evidence, he makes a class-wide assertion that “Clearly, publishers knew of Valve’s parity rules and abided by them.”⁵³⁹

⁵³⁵ Schwartz Deposition, p. 197 (“Q. So in order for the so-called PMFN to work, the developers -- the publishers have to know about it; right? A. In order for the PMFN to work, there have to be enough publishers to know about it that you have substantial compliance with it such that effective entry is precluded on the part of a competing platform.”).

⁵³⁶ Schwartz Report, ¶ 321 (“Moreover, when Steam enforces the PMFN against some of its largest publishers, it sends a strong signal to all publishers of its willingness to take steps to enforce the policy.”).

⁵³⁷ Schwartz Report, ¶ 321 (“PMFN Policy enforcement against high-revenue publishers limits the ability of rival platforms to compete effectively with Steam. Valve may prioritize efforts among its highest drivers of revenue, which, consequently, have the most visibility in the relevant market. As discussed above in 5.2, large publishers such as [REDACTED] and others experienced Valve’s PMFN enforcement, and thus put on first-hand notice of Valve’s PMFN Policy. Even if only these large publishers were directly impacted by Valve’s PMFN Policy, that would take a major portion of the available commerce off the market for alternative platforms, depriving those alternative platforms of the volume they would need to succeed against Valve. Moreover, when Steam enforces the PMFN against some of its largest publishers, it sends a strong signal to all publishers of its willingness to take significant steps to enforce the policy. Put differently, if publishers such as [REDACTED] and others are vulnerable to punishment for violating the PMFN, no publisher is safe.”).

⁵³⁸ Schwartz Report, ¶¶ 175 (“In emails between [REDACTED] and Valve, Valve personnel noticed other stores—notably Play.com and Amazon—were offering lower prices to customers purchasing [REDACTED] 178 (“In a series of emails in March 2010, Valve notified [REDACTED] that [REDACTED] games [REDACTED] and [REDACTED] would not be offered on Steam in [REDACTED] ‘because they are not competitively priced[.]’ In the same email chain, Valve began referring to the phenomenon of publishers offering lower prices on other platforms as [REDACTED] pricing issue.”) Valve took the position that allowing lower prices on other platforms would mean that Valve is ‘essentially advertising to [its] customers that Steam is not competitive with regular price.’”), 180 (“In a 2014 email, Valve explained to [REDACTED] that it would not launch the game since ‘there is still a conversation going on in regards to pricing for [REDACTED] in [REDACTED]’ Valve informed [REDACTED] that it will ‘wait to the list the game until the pricing on Steam can be more in line with what customers have access to through other outlets [in [REDACTED] Additionally, in the same year, Valve noted that [REDACTED] had advertised another two games, [REDACTED] and [REDACTED], on other platforms in the UK for around 20% lower than the Steam price.”).

⁵³⁹ Schwartz Report, ¶ 322.

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Dr. Schwartz also cites check-boxes in the Steam key request form as a way that publishers learn about the alleged PMFN.⁵⁴⁰

313. Evidence in the record is at odds with the claim that all publishers were aware of the alleged PMFN or the enforcement of price parity against large publishers. For example, an email exchange between Valve and [REDACTED] employees showed that [REDACTED] was not aware of conditions on pricing until it had a Steam key request denied.⁵⁴¹ Similar exchanges occurred between Valve and [REDACTED] (discussing Steam key giveaways),⁵⁴² [REDACTED] (discussing promotions on [REDACTED]),⁵⁴³ [REDACTED] (discussing selling Steam keys in bundles),⁵⁴⁴ and [REDACTED] (discussing discounting Steam keys on Humble),⁵⁴⁵ suggesting that publishers were unaware of the alleged PMFN or any alleged enforcement of it.

⁵⁴⁰ Schwartz Report, ¶ 157 (“Valve also enforces price parity as part of its PMFN policy. This policy is clearly articulated to publishers requesting Steam keys. When a publisher requests Steam Keys, it must agree to three commitments.”); Schwartz Deposition, pp. 206–207 (“Q. Well, you said they don’t apply to Steam keys. Isn’t it fair to say that some users who are applying for Steam keys and who are being asked to agree to those three points will understand that those three points pertain to Steam keys? ... [A]: I think anyone who reads those and reads them carefully would take note of the fact that there are three understandings to which they need to agree. One of them mentions Steam keys explicitly. Two of them do not. And I think it is a fair reading by a careful developer reviewing that document that the expectation is that the policy that’s described in those understandings extends beyond Steam keys. If you have a document that’s carefully drafted, one point of which refers explicitly to Steam keys and that two do not, I think it’s fair to infer that a careful developer reading that would read them as written. And one provision applies to Steam keys and two apply beyond Steam keys.”).

⁵⁴¹ Email chain from Tom Giardino to [REDACTED], “RE: [REDACTED] Humble Bundle Name Change,” May 23, 2017, VALVE_ANT_0598921–925 at 921, 924 (“Hi Tom, Regarding the [REDACTED] we put in a request for [REDACTED] keys and it just got denied. As this DLC is part of the [REDACTED], they requested to have these keys be Monday. If it’s possible can we get this request through ASAP? Can you also let us know why this request was denied? ... Thanks for jumping on the call with us and explaining everything. I’m still learning the ins and outs of Steam so this was very helpful for me too. I’ll try to be an extra layer internally to make sure we’re not releasing things that will affect our players on Steam.”).

⁵⁴² Email chain from [REDACTED] to Cassidy Gerber, “RE: reality check needed,” December 17, 2021, VALVE_ANT_1220287–289 at 287–288 (“Oh man I had no idea you guys are doing these now! ... So if it’s free to the partner site’s consumer but the partner paid an upfront fee for it, you guys want it to be offered to Steam customers for free during the same time period? ... You gotta help me understand your stance on having the same promo, though, because I am not getting it. Maybe I wasn’t clear on the deal?? Humble would be buying the keys from us and using them as a giveaway. You’re expecting us to give away the title for free on Steam even though Humble paid for them. I don’t get it -- I don’t even have the same opportunity to do the same deal with you guys because you are rev share only and don’t buy keys. Is this a new policy or something?”).

⁵⁴³ Email chain from [REDACTED] to Cassidy Gerber, “RE: Valve / [REDACTED] Intro,” April 30, 2018, VALVE_ANT_1548456–461 at 456, 458–459 (“[REDACTED] met internally and discussed a few use cases that we would like help clarifying ... As a player, I can buy the game on Steam and then buy MTX on [REDACTED] (outside the game) and use those MTX items in my Steam games using a connected [REDACTED] identity ... Thanks. So it isn’t as much about the cost, it could be something free but the fact that we are promoting it is disallowed by that term unless you can get the same thing through the Steam store. This will be a sticking point for the [REDACTED]. What do you suggest is the next step to keep that exploration/discussion going?”).

⁵⁴⁴ Email chain from DJ Powers to Tom Giardino, “RE: Launching a steam title on humble,” February 15, 2021, VALVE_ANT_1186878–879 at 879 (“We’re currently working on a new, unannounced title called [REDACTED] and will be launching it on steam some time within the coming 2–4 months. We’re in discussions with humble about featuring the game upon launch in one of their bundles. Obviously this means we’re gonna need a ton of steam keys ahead of launch so they can set it up their end. Ideally the game would go live on steam at the same time as the bundle goes live. Is this doable? Is this ok with valve policy?”).

⁵⁴⁵ Email chain from Erik Peterson to Nathaniel Blue, “RE: Humble Bundle Promo,” May 22, 2018, VALVE_ANT_1129469–475 at 471–472 (“I’ve secured a featured promo giveaway for [REDACTED] on Humble for this Thursday 5/24, leading into Memorial Day weekend. It’s the same format of what we did with [REDACTED] late last year, which led to a concurrent peak and some decent in-game item revenue. It was generally good to get wider exposure and an influx of new players, so I decided to participate again for [REDACTED]. And we can definitely do something like this on Steam as well. They are asking us to request for [REDACTED] keys, which is a pretty big number I realize, and my request then got denied over the weekend. I’m looking at the giveaway for [REDACTED], and it looked like we got about [REDACTED] of actual activations approximately, and I’m wondering if I should request say [REDACTED] to start to be safe? ... Sorry. We are asking that you treat Steam customers the same one other sites for large key requests these days ... Oh I see! That makes total sense. Thanks for ton for taking the time and explaining this!”).

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314. Deposition testimony also provides evidence that publishers were unaware of the alleged PMFN. For example, [REDACTED] employees testified that “Steam does not require price parity,” that “Valve never implied any requirements around price parity,” and that the alleged PMFN “does not exist.”⁵⁴⁶ Similarly, [REDACTED] from [REDACTED] testified that Valve does not dictate prices and described Valve as “laid back about what we, as a developer, want to do” when setting prices. Valve never told [REDACTED] that its price must be a specific dollar amount and never penalized [REDACTED] in any way due to pricing on other platforms.⁵⁴⁷
315. In addition to being at odds with record evidence, Dr. Schwartz’s assumption that sporadic enforcement affects all publishers’ pricing decisions is inconsistent with patterns in the data. If selective enforcement did affect the pricing decisions of all publishers, prices should rarely be lower outside of Steam than on Steam. As shown in Section 7.1.1, this is not the case.
316. If many publishers are not aware of pricing restrictions, or of enforcement, then sporadic enforcement cannot affect publishers’ pricing decisions industry-wide. Assessing antitrust injury from the alleged PMFN is not possible without individualized inquiry into publishers’ knowledge of the alleged PMFN. In instances where Valve contacted publishers about pricing, assessing antitrust injury from this contact is not possible without individualized inquiry into the context of those communications and what, if anything, the publisher did in response. Plaintiffs and Dr. Schwartz have not presented evidence that contacts or enforcement affected enough publishers’ future pricing decisions to have a market-wide effect.

7.2.2. Plaintiffs’ evidence of Valve’s alleged sporadic enforcement of a price PMFN suggests that enforcement is context-dependent

317. Evidence in the record and Dr. Schwartz’s analysis show that there is substantial variation in alleged enforcement of the alleged price PMFN. In this section, I first show that record evidence is inconsistent with Valve systematically enforcing a PMFN. I then show that, in the instances where Valve did contact publishers about pricing on competing platforms, Valve’s reasons for contacting publishers varied, and that Valve had procompetitive justifications for restricting prices on competing platforms. Assessing antitrust injury from the alleged PMFN requires individualized inquiry into

⁵⁴⁶ [REDACTED] Deposition, pp. 15 (“I asked [REDACTED] about this statement, and he said that the way he wrote this was not accurate and that he was speaking specifically to product parity but not price parity and he was mistaken, that the policy was Steam does not require price parity.”), 16 (“it was consistent with other people that I spoke to that while there’s an expectation for product parity our agreement and other conversations we’ve had with Valve never implied any requirements around price parity.”); Deposition of [REDACTED], p. 18 (“Q. ... So first, more broadly, just any understanding as to whether any such policies exist and, if so, what they are? A. Yes, there is an understanding. I do have an understanding now, yes. Q. What is that understanding? A. Well, that one does not exist. Q. That Valve has no pricing policies when it comes to how PC video games should be priced on Steam versus how they should be priced on other stores? A. Correct.”).

⁵⁴⁷ [REDACTED] Deposition, pp. 37–38 (“Q. Have you described -- ever discussed pricing generally with Valve? A. We have sought advice on pricing, yes. Q. And did you find their advice to be helpful? A. Yes. Q. Did you feel like they were telling you what you must do? A. No. Q. Did you feel threatened or coerced? A. No. ... Q. ... Did Valve ever tell [REDACTED] that its price must be a specific dollar amount? A. No. Q. Did Valve ever punish in any way [REDACTED] due to pricing on other platforms? A. No. Q. How would you describe kind of the relationship with Valve when it comes to seeking advice on pricing matters? A. I think that they are very knowledgeable and provide us value from that point of view, but they are, you know, laid-back about what we, as a developer, want to do. Q. Would it be fair to characterize them as a trusted adviser in that respect? ... A. Yes, it would.”).

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each enforcement instance to determine whether Valve had a procompetitive justification for restricting prices in that instance, and into the details of any alleged enforcement to determine its effect, if any.

318. Record evidence suggests that when a publisher offered its games for lower prices on competing platforms, **whether Valve contacted that publisher depended on the context of the situation**. Valve's CEO testified that "Valve has no policy of telling software developers what their prices should be on other platforms."⁵⁴⁸ Valve does not systematically monitor prices on different stores.⁵⁴⁹ When it did come to Valve's attention that a price on a competing store is lower compared to Steam, whether that was concerning to Valve "depends on context."⁵⁵⁰ In the instances where Valve employees did contact publishers about pricing, different Valve employees contacted different publishers.⁵⁵¹ Both this record evidence and the lack of empirical evidence of a price PMFN (see Section 7.1.1) suggest that Valve does not systematically contact publishers who offer lower prices on competing stores, and instead, when contact did occur, such contact depended on the context.
319. Among publishers Valve contacted regarding pricing, the impact from the alleged PMFN varied because Valve's reasons for contacting publishers varied, what was said varied, and the publishers' responses varied. The instances where Plaintiffs or their experts claim Valve contacted publishers about prices on competing platforms generally fall into two categories: (a) Valve contacted publishers of games that were part of Steam's curated marketing campaigns and had lower prices outside of Steam, and (b) Valve contacted publishers of games that offered lower prices on Steam key resale sites.⁵⁵² As discussed below, Valve had procompetitive justifications for restricting prices in both situations. Determining whether these procompetitive justifications outweighed allegedly anticompetitive effects would require individualized assessment. Even without these procompetitive justifications, determining what happened in and following these alleged contacts would require individualized inquiry.
320. **Preventing showrooming and the free-rider problem.** Record evidence suggests that Valve contacted some publishers of games that were receiving curated marketing

⁵⁴⁸ Newell Deposition, pp. 12–13 ("Q. What is Valve's policy on price parity, namely, asking developers who sell their game on Steam and also sell their game on other platforms to price their game no lower on that other platform than what they are prices on Steam? A. Valve has no policy of telling software developers what their prices should be on other platforms.").

⁵⁴⁹ Deposition of DJ Powers, 30(b)(6) (Valve), September 29, 2023 ("Powers Deposition"), p. 34 ("Q. Well, Valve monitors the prices at which games being sold on Steam are being sold elsewhere, right? A. No."); Deposition of Nathaniel Blue (Valve), October 4, 2023, pp. 87–88 ("Is Valve able to see the price that is charged when a Steam Key is used on another store or platform? ... A. I don't -- I don't believe so.").

⁵⁵⁰ Powers Deposition, p. 134 ("I think the reason it's bolded is because it's a higher price on Steam is accurate. Q. All right. And that happens -- there's a couple instances of that, but would that be a concern to Steam -- or to Valve? A. It all depends on context. It's worth noting I don't think a \$5 difference there is something we're going to reach out about, but.").

⁵⁵¹ Newell Deposition, pp. 160–161 ("Q. Do you have an explanation as to why so many different people that we've looked at in these exhibits over more than ten years have been communicating with developers in a way that you've characterized as inconsistent with Valve's policies on communicating with developers about their game pricing? A. My expectation would be that the vast majority of discussions with third-party software developers have been consistent with our policies and our practices.").

⁵⁵² Determining whether the alleged enforcement of a PMFN falls into one of these two categories would require individualized inquiry.

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benefits from Valve, yet had lower prices outside of Steam at the same time.⁵⁵³ In these instances, Valve had an incentive to prevent “showrooming,” where publishers take advantage of the search and marketing capabilities of a high-quality platform to give visibility to their products, but then divert consumers to a different channel for purchases through lower retail prices.⁵⁵⁴ Showrooming is a type of “free riding.” A free-rider is someone who receives the benefit of a good or service but does not bear the cost. When someone is allowed to free-ride, markets tend toward inefficient outcomes where the supplier reduces its investment in the good or service and may stop providing it at all.⁵⁵⁵ Consequently, the economic literature widely recognizes that restrictions on pricing can be procompetitive when used to prevent showrooming because they protect the platforms’ investments in higher quality.⁵⁵⁶

321. Dr. Schwartz claims that Valve is not justified in attempting to prevent showrooming. This claim is based on two flawed assumptions. First, Dr. Schwartz assumes that Valve made an initial one-time investment in search and marketing at Steam’s launch, which it has since recouped. Dr. Schwartz claims that, because Valve recouped its initial

⁵⁵³ See, e.g., Powers Deposition, p. 102 (“Q. So what Valve did here is they removed the marketing -- the curated marketing for [REDACTED] as a consequence for [REDACTED] pricing [REDACTED] on a [REDACTED] at a lower amount? A. We removed it to protect customers from purchasing it at a price they’re going to feel bad about later.”).

⁵⁵⁴ Margherita Colangelo, “Competition Law and Most Favoured Nation Clauses in Online Markets,” in *New Developments in Competition Law and Economics*, Volume 7, eds. Klaus Mathis and Avishalom Tor, (Switzerland: Springer Nature, 2019), pp. 295–317 at p. 299 (“without protective measures such as MFN clauses, suppliers may use online platforms to attract customers yet subsequently switch demand to their direct or other sales channels by reducing prices. Thus, customers might use the platform in order to get information about the product or services and then subsequently finalize the transaction on the supplier’s website or through other channels at a lower price.”).

⁵⁵⁵ Mankiw 2023, p. 214 (“A free rider – the term for a person who receives the benefit of a good without paying for it. If most people would choose to be free riders ... the market would fail to provide the efficient outcome.”); Hal R. Varian, *Microeconomic Analysis*, Third Edition, (New York, NY: W.W. Norton & Company, 1992), p. 417 (“If consumer 1 buys the good, he gets \$100 worth of benefits, but has to pay \$150 for these benefits. If consumer 1 buys, but consumer 2 refrains from buying, consumer 2 gets \$100 worth of benefits for free. In this case we say that consumer 2 is free riding on consumer 1 ... The dominant strategy equilibrium in this game is (don’t buy, don’t buy). Neither consumer wants to buy the good because each prefers to free-ride on the other consumer. But the net result is that the good isn’t provided at all, even though it would be efficient to do so. This shows that we cannot expect that purely independent decisions will necessarily result in an efficient amount of the public good being provided. In general it will be necessary to use more complicated mechanisms.”).

⁵⁵⁶ Justin Johnson, “The Agency Model and MFN Clauses,” *The Review of Economic Studies*, 84(3), 2017, pp. 1151–1185 at 1173 (“Although the analysis above indicates how MFNs may raise prices and harm consumers, it is not hard to imagine how MFNs might also be pro-competitive. For example, MFNs might encourage investments. This force seems particularly relevant for markets where the retail landscape is changing rapidly. In particular, many new online retailers have appeared in recent years, and some of them have chosen to use price-parity restrictions. Some of these retailers have faced substantial costs of developing their online platforms and it is possible that price-parity restrictions have encouraged their entry and benefitted consumers. For instance, Amazon and Apple played important roles in building the e-book market, investing not only in online stores but in hardware devices that encouraged e-book adoption. It is unclear whether A have made these investments without the guarantees provided by MFNs, which possibly would have left Amazon unchecked and consumers and publishers with fewer options. In other words, it is possible that the entry-inducing effects of MFNs played a role in the e-book market.”); Jonathan Baker and Fiona Scott Morton, “Antitrust enforcement against platform MFNs,” *The Yale Law Journal*, 127(7), 2018, pp. 2176–2203 at 2184 (“[Consumers] will search for rooms on an OTA [online travel agency] that facilitates searching and comparison among many hotels, but book through the hotel site or a rival OTA that offers a lower price. When the lower price arises because the rival has lower costs (e.g., it charges no commission), the consumer has taken advantage of the costly functionality supplied by one OTA without paying for it. If many hotels and consumers engage in such practices, the efficiency theory goes, the OTA would foresee this problem and not invest in producing the desired functionality. The OTA may not find it profitable to invest in expensive site features, even though consumers are willing to pay for them. Such features might include an attractive design or convenient search and comparison tools. If the OTA cuts back on upgrading its interface and features and on marketing its services, it will lose customers. If [showrooming] is important, therefore, quality competition in online travel may be harmed. Full service OTAs would come to have less competitive significance over time and would eventually exit. Only no-frills discounters and hotel-only sites would thrive, so consumers’ transaction costs of searching would rise. In theory, an MFN could prevent this outcome. It would allow a full-service OTA to prevent hotel [showrooming] on the OTA’s advertising efforts, thereby allowing the OTA to be compensated for the promotional services it provides. If consumers value full-service OTAs highly, they will be better off as a result.”).

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investment, it does not have a procompetitive justification to protect its investment in search functionality.⁵⁵⁷ This ignores the continual investments that Valve makes in Steam features, which I discussed in Section 5.1.1 above.

322. Second, Dr. Schwartz claims that “many competing platforms were established years after Steam” and therefore that “users would not have a viable alternative platform to purchase a game on after finding it on Steam.”⁵⁵⁸ Determining whether this is true requires individualized inquiry into the competing platforms available at any particular point in time. The likelihood of a consumer buying a game on a separate platform after seeing it marketed on Steam depends on which platforms that game is offered on. As discussed in Section 6, the extent to which publishers choose to offer their games on different platforms varies, so determining whether Valve’s alleged restrictions prevented showrooming requires individualized inquiry into the platforms on which each game is offered.

323. **Preventing free-riding regarding Steam keys.** Record evidence suggests that Valve sometimes restricted Steam keys for publishers of games that offered lower prices on Steam key resale sites.⁵⁵⁹ In these instances, Valve had a procompetitive incentive to prevent publishers from offering lower prices on Steam keys outside of Steam. Steam keys are a source of revenue for developers and available to developers for free,⁵⁶⁰ but Valve still bears the costs of distributing games through Steam keys.⁵⁶¹ Since Steam key resellers rely on Steam’s infrastructure, features, and customer support, Valve has an incentive to limit the number of keys issued, and valid business reasons to attach conditions to their use, in order to prevent free-riding on Steam features.⁵⁶² Without

⁵⁵⁷ Schwartz Report, ¶ 325 (“The argument does not fit the facts here. Steam was able to recoup the costs of implementing any valuable fixed investment costs (such as a search mechanism) very quickly. While Steam’s reported after-tax net profit was negative in each year from [REDACTED], lifetime after-tax net profits turned positive as early as [REDACTED] finishing the year with [REDACTED] in lifetime after-tax net profits. Thus Steam was able to recoup its initial investments by [REDACTED] at the latest, and the investment justification would not apply as an empirical matter after [REDACTED].”)

⁵⁵⁸ Schwartz Report, ¶ 327 (“The availability of other PC game platforms and discrepancies in the size of game libraries make it unlikely that users would choose to switch between platforms to search and then purchase a game. As discussed in Section 4.1.2, many competing platforms were established years after Steam. Therefore, for many years since Steam’s launch, users would not have a viable alternative platform to purchase a game on after finding it on Steam.”).

⁵⁵⁹ See, e.g., Email chain from Tom Giardino to [REDACTED], “RE: [REDACTED] Humble Bundle Name Change,” May 23, 2017, VALVE_ANT_0598921–925 at 924 (“Hi Tom, Regarding the [REDACTED] we put in a request for [REDACTED] keys and it just got denied. As this DLC is part of the [REDACTED], they requested to have these keys be Monday. If it’s possible can we get this request through ASAP? Can you also let us know why this request was denied? ... If it’s just going on sale on Humble’s store at the same price, that’s no big deal, but it’s not OK to use steam keys to disavange [sic] Steam customers, and we’re especially sensitive to that at launch. Not a big deal to run a humble bundle on your content when the time is right, but we’re never OK with getting beat on price/offer at launch.”).

⁵⁶⁰ Steamworks, “Steam Keys,” available at <https://partner.steamgames.com/doc/features/keys>, accessed on April 18, 2024 (“Steam Keys are a free service we provide to developers as a convenient tool to help you sell your game on other stores and at retail, or provide for free for beta testers or press/influencers.”).

⁵⁶¹ Kyle Orland, “Why Valve actually gets less than 30 percent of Steam game sales,” *Ars Technica*, April 4, 2019, available at <https://arstechnica.com/gaming/2019/04/why-valve-actually-gets-less-than-30-percent-of-steam-game-sales/>, accessed on April 18, 2024 (“Remember also that Valve incurs plenty of costs for these Steam key sales. Beyond the mere bandwidth costs for game and update downloads, key-based sales can still access the same online lobbies, achievement and leaderboard systems, Steam Workshop inventory management, Steam server APIs, anti-cheat services, and everything else that comes with being on Steam. Epic, on the other hand, provides very few of these services in exchange for the 12 percent cut on its Games Store (though the company does have a roadmap to roll out many similar features in the coming months).”).

⁵⁶² In line with this fact, the Court opined that Valve “has no duty to deal” Steam keys, and that “So long as it has a valid business reason for the terms it attaches to its Steam Keys, those terms cannot, as a matter of law, represent unlawful antitrust conduct.” The Court opined that “insisting that Steam customers get comparable deals to non-Steam customers” is not irrational. See Order, *Dark Catt Studios Holdings, Inc. and Dark Catt Studios Interactive LLC v. Valve Corporation*, November 19, 2021, p. 4

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games from curated marketing or suggest postponing the curated marketing for a few weeks until after a discounted sale on another site had ended.⁵⁶⁵

327. In addition to the ways in which Valve’s alleged conduct varied, **publishers’ responses to the alleged conduct varied**. Dr. Schwartz highlights publishers’ varying responses in Figure 3 of his report. The figure reproduces an email from DJ Powers, a member of the Steam Business Team, giving a range of possible responses: “Sometimes, the partner will go ahead and run the discount on Steam. Sometimes, the partner will talk with [the competing platform] and have the discount removed or adjusted. Sometimes, we end up in a standoff.”⁵⁶⁶ Each of these outcomes could lead to no impact, or different types of impact, which would vary by publisher.
328. The Named Plaintiffs provide further evidence of the need for individualized inquiry into the effect of the alleged PMFN on publishers’ future pricing decisions. There is no evidence that Valve contacted Dark Catt about pricing or content on other stores. Wolfire’s CEO David Rosen testified that, during a conversation he had with a Valve employee about Valve’s tiered revenue shares, they discussed Wolfire offering lower prices on competing platforms, but for the reasons discussed above, assessing antitrust injury from this conversation would require considering Mr. Rosen’s testimony and investigating Wolfire’s business records to determine if the incident affected Wolfire’s future pricing decisions.⁵⁶⁷
329. All the above differences indicate that assessing antitrust injury requires individualized inquiry into each instance where Valve employees contacted publishers about prices to determine whether the publishers changed their prices in response to being contacted by Valve employees, how Valve responded if the publisher did not lower prices on Steam, and the effect of Valve’s response on the publisher’s decisions.

⁵⁶⁵ Schwartz Report, Footnote 497 (quoting VALVE_ANT_0372900–08 at VALVE_ANT_0372907) (“You currently have a sale on your site running at 25% (██████████) and you have only authorized a 20% discount on our site. Please allow us to offer your games at 25% off so we match. If not, we should end our sale on your products so we do not upset our users.”).

⁵⁶⁶ Schwartz Report, p. 110, Figure 3 (“The development partner would usually come back with ‘██████████ is eating their margin to run that sale, you are welcome to do the same on Steam’. We say ‘that’s not the way we run our business, we work on rev share not wholesale price’. Sometimes, the partner will go ahead and run the discount on Steam. Sometimes, the partner will talk with ██████████ and have the discount removed or adjusted. Sometimes, we end up in a standoff. In this situation, we will often limit the marketing of the title on Steam until the pricing is competitive among platforms.”).

⁵⁶⁷ Rosen, David Deposition, pp. 245 (“Q. What is the evidence that partners expect some sort of action by Valve that they charge a lower price on a different store than Steam? ... [A]: There -- a couple of things stood out. Like one was when Tom Giardino just told me directly that they would remove my games if I charged a lower price on a different store, which made me expect consequences.”), 246–248 (“Q. You mentioned that you had a conversation with Tom Giardino at Valve. When was that conversation? A. That was sometime in 2018, shortly after they announced their price tiers or commission tiers. Q. Was that a conversation by e-mail? A: That was video chat. Q. How did that conversation come about? A. I believe I e-mailed him to say that I had some concerns about the new structure and how I had highlighted some problems. Q. When you say new re- -- ‘new structure,’ did you mean the additional revenue tiers -- the additional revenue share tiers Valve had announced? A. Yes. Q. Okay. How did it come up in that conversation that -- how did the discuss- -- how did that conversation turn to the pricing of Wolfire’s games? ... [A.] I had told him that I was thinking of treating my games like wholesale products. So I’m selling -- so I’d sell Overgrowth for \$20 to Valve, and they can price it -- they can mark it up however much they want. In this case, to get their 30 percent, they would mark it up to \$30, which is what it was priced at. But other stores like Epic would mark it up 12 percent, which would result in a lower price. And that’s when he told me that I couldn’t do that. If I did, I would be removed from Steam. Q. You would be re -- Wolfire would be removed from Steam if it tried to wholesale its games to Valve? ... [A.] Well, charged a lower price on a different platform. That was just the example I was using. ... Q. Do you recall the specific words Mr. Giardino used in that meeting? A. I don’t remember the specific way that he said that.”).

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7.2.3. Whether an alleged price PMFN would restrict the pricing decisions of a publisher depends on individual factors

330. In this section, I discuss how economic theory and empirical evidence show that, if an alleged PMFN were systematically enforced, determining its effect on publishers’ pricing decisions would require individualized inquiry. I discuss how the effect of the alleged PMFN would depend on the supply and demand conditions for each game, including each game’s availability on other platforms.
331. As a general point, how publishers choose prices across stores depends on a wide variety of factors unrelated to the alleged PMFN. To demonstrate this, I examine variation in average daily prices across Steam and EGS for every game that appears in both stores in the ITAD data. I calculate the average price for each game over the period in which pricing data for both stores are available for that game. I then calculate the ratio of average prices on Steam and EGS as the average Steam price over the average EGS price.
332. Exhibit 21 plots the distribution of these average price ratios for all games in the ITAD data available on both Steam and EGS. The dashed line in the middle of the chart indicates a ratio of one; this occurs when the average prices are equal on Steam and EGS. The tall, dark blue bar in the center of the graph represents games with an average price ratio very close to one (0.99 to 1.01); these are games for which the difference in average price across platform is negligible (within one percentage point in either direction). Games to the left of the dashed line have a lower average price on Steam than on EGS, and games to the right of the dashed line have a higher average price on Steam than on EGS. If all publishers chose prices in a similar way across platforms, this would be reflected in this exhibit. For example, if all publishers chose prices according to revenue shares, prices would be consistently lower on EGS than on Steam for all games. Similarly, if a PMFN were in place, then prices would be similar across platforms with little variation across games. The substantial variation in average prices on Steam and EGS across games demonstrates that many individualized factors affect publishers’ pricing decisions.⁵⁶⁸
333. **Video game pricing depends on a variety of factors, and whether the alleged PMFN would cause publishers to change their pricing decisions would depend on these factors.** As discussed in Section 2.1.4 above, pricing depends on both demand elasticity—that is, how responsive consumers are to price changes—and consumers’ cross-platform elasticity—that is, the extent to which consumers are willing to switch platforms if a game is offered at different prices—which can be low if there are quality differences across platforms. If consumers have preferences for certain platform features, they may be less likely to substitute across platforms. If so, publishers will not

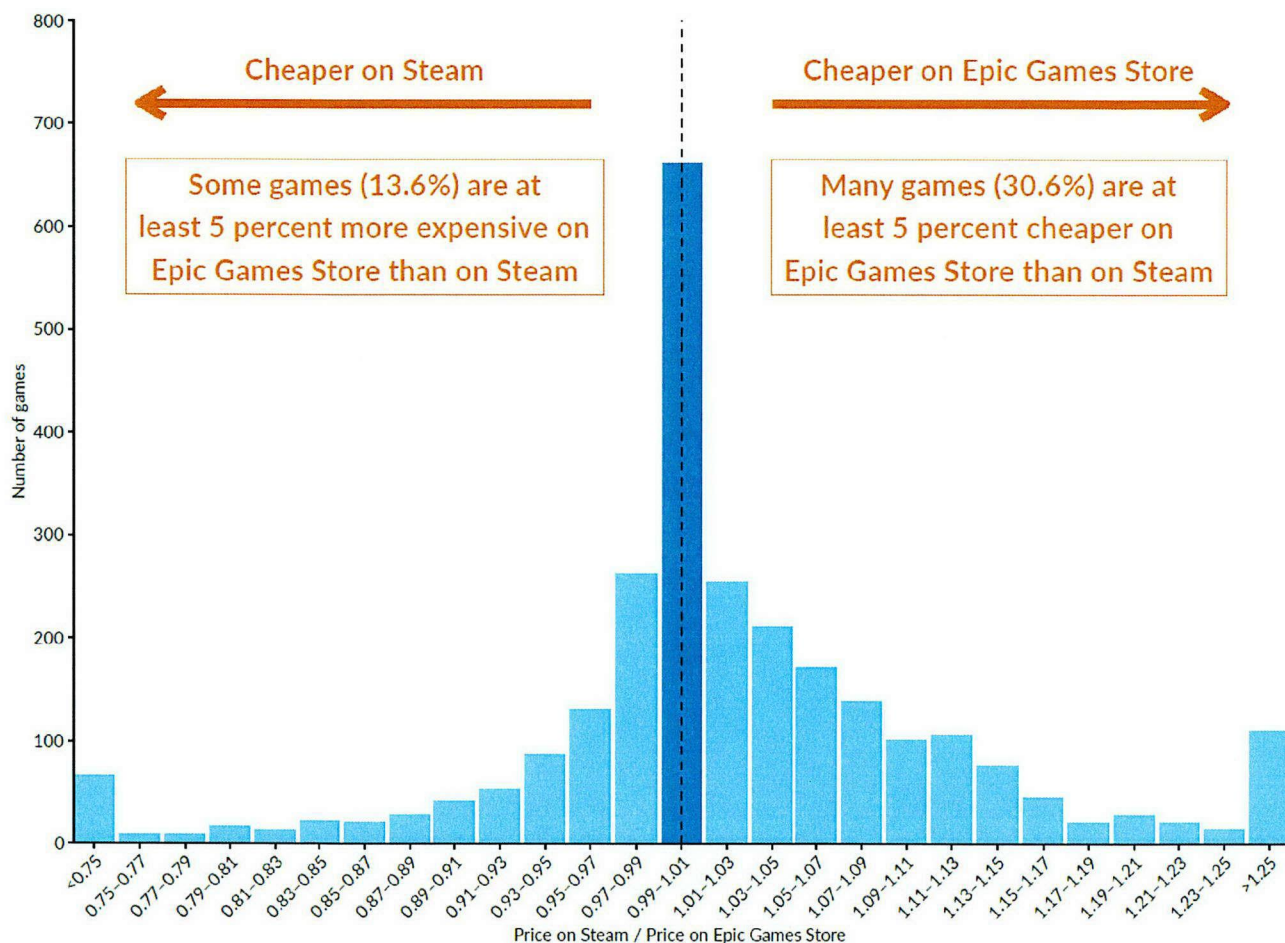
⁵⁶⁸ Note that if Dr. Schwartz’s assumption that sporadic enforcement affects pricing industry-wide were true, very few games should appear to the right of the number one in Exhibit 21. Evidence of many games where the ratio of average Steam price to average EGS price is greater than one is evidence against Valve enforcing a PMFN that systematically restricts prices.

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have strong incentives to charge lower prices on lower-fee platforms because these discounts may not be sufficient to cause consumers to switch platforms.⁵⁶⁹

Exhibit 21

Price comparison between Steam and EGS varies widely across games



Source: *IsThereAnyDeal*

Note: For any particular game, the average prices on Steam and EGS are calculated as the average daily prices over the period when the game is available on both Steam and EGS. The ratio is calculated as Steam price over EGS price. Hence, games to the left had a lower average price on Steam, and games on the right had a higher average price on Steam. Daily prices in each store are obtained from the price changes recorded in the ITAD data between the first price change until the last price change recorded. See Appendix Section 18 for details.

334. Consistent with these theoretical predictions, some publishers prefer offering the same prices across platforms regardless of the alleged PMFN or differing costs. The analysis of pricing across platforms by Ars Technica that I discussed in Section 7.1.2 demonstrates this point by showing that some publishers prefer to offer the same prices across

⁵⁶⁹ Wing Man Wynne Lam, "Switching Costs in Two-Sided Markets," *The Journal of Industrial Economics*, 65(1), 2017, pp. 136–182 ("more patient consumers are less tempted by a temporary price cut because they understand that the price cut will later be followed by a price rise. Their demand therefore is less elastic, and platforms will respond by charging higher prices.").

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platforms regardless of revenue shares.⁵⁷⁰ Publishers who prefer to set similar prices across platforms would act no differently whether or not there was a price PMFN.

335. Deposition testimony demonstrates that some publishers prefer to offer the same price across platforms. For example, testimony from Named Plaintiff Wolfire demonstrates that, for games offered on multiple PC platforms, “different Windows stores would tend to be priced similarly.”⁵⁷¹ Similarly, ██████ testified that ██████ tries to price consistently across platforms because of “Consumer expectation, but also being fair to consumers.” ██████ testified that while ██████ chooses to set prices consistently across platforms, it is not because of Valve or an alleged PMFN.⁵⁷² Instead, ██████ sets prices consistently across platforms because consumers may be upset if they find out they could have purchased a game for a lower price on a competing platform.⁵⁷³ In another example, ██████ from ██████ testified that “Our pricing is not related to any Steam policy. Our pricing is determined by us, and we want that price to be consistent. We work very hard to make that consistent no matter if it’s our store or Steam or anywhere else.”⁵⁷⁴ He described pricing for a game as follows:⁵⁷⁵

“We’re very intentional about trying to have the right price for the product and to meet customers’ expectations and ultimately then we want our pricing to be consistent and give customers choice whether they buy the game, subscribe to ██████, buy it on console, buy it on PC, buy it at our store, buy it on Steam or somewhere else. We try to give customers choice. But when they do buy a game from us, we want that price to always be consistent. Because if we don’t, we’ll have quite a bit of backlash. And gamers are quite vocal on social media and what have you. So, you know, it just would not be smart for us because we think about customer sentiment in our business.”

⁵⁷⁰ Kyle Orland, “Steam’s ‘price parity rule’ isn’t wreaking havoc on game prices,” *Ars Technica*, May 13, 2021, available at <https://arstechnica.com/gaming/2021/05/why-lower-platform-fees-dont-lead-to-lower-prices-on-the-epic-games-store/>, accessed on December 8, 2023 (“Regardless, even if we remove Steam’s alleged price-fixing from the equation, publishers still seem reluctant to pass on the savings from the EGS’s lower cut. This is apparent when you look at the Epic Games Store PC exclusives that are also sold on consoles, where the platform holders each take their own 30 percent cut. An Ars analysis found that out of 41 such games, only five were offered for a lower price on the EGS. The rest of the games were priced identically on PC and console, except for eight that were actually cheaper on console thanks to a temporary sale. Again, publishers largely aren’t lowering their prices even though Epic has lowered its relative platform cut. The same phenomenon remains true even if we take consoles out of the equation. Since early 2019, Ubisoft’s new PC games have avoided Steam in favor of distribution on the EGS and Ubisoft’s Uplay platform. But even though Ubisoft doesn’t pay any platform fees for games sold through Uplay, the prices for games like Watch Dogs: Legion and Anno 1800 are the same across Uplay and the EGS. Ubisoft isn’t interested in ‘passing on the savings’ from avoiding the EGS’s 12 percent cut in these cases, even though doing so would likely make Uplay a significantly more appealing option for cost-conscious players.”).

⁵⁷¹ Rosen, David Deposition, p. 223 (“Q. But in your experience, was it common for games similar to Overgrowth to be priced the same across all different stores or platforms? ... [A]: Usually within the same platform -- or within the same -- like different Windows stores would tend to be priced similarly. But they might be different on PC and on Xbox or that kind of thing.”).

⁵⁷² ██████ Deposition, p. 37 (“Q. And generally speaking, does ██████ try to price consistently across platforms? ... A. Generally speaking, yes. Q. ... And what are the reasons for generally trying to do that? ... A. Consumer expectation, but also being fair to consumers. Q. ... Okay. And are you generally trying to do that because of some Steam policy or because of something they’re telling you? A. No.”).

⁵⁷³ ██████ Deposition, pp. 38–39 (“Q. ... Are you familiar with your customers’ reactions to games being priced differently in different places? A. Yes, I am. Q. For example, have you ever experienced where a user may regret their purchase or become upset if they find out they could have purchased a game cheaper somewhere else? A. Yes, they will.”).

⁵⁷⁴ ██████ Deposition, p. 41.

⁵⁷⁵ ██████ Deposition, p. 45.

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336. Because a publisher’s pricing choices depend on the demand elasticity of consumers and the cross-platform elasticity of consumers, establishing antitrust injury from an alleged PMFN requires individualized inquiry based on each publisher’s supply and demand conditions that affect how it would choose prices in a but-for world.⁵⁷⁶ Professor Rietveld agrees that publishers face “heterogeneous player demand for their PC game content,” which suggests that publishers would be differentially affected by the alleged PMFN.⁵⁷⁷
337. **A game’s monetization strategy also affects the extent to which the alleged PMFN would affect its prices.** Publishers of free-to-play games would not be directly affected by the alleged PMFN because prices for their games are zero. As a more general point, the extent to which the alleged PMFN would directly affect prices depends on how heavily publishers depend on microtransactions. In 2022, 95.4 percent of publishers on Steam did not make any of their revenue on microtransactions while 2.1 percent of publishers on Steam made *all* of their revenue on microtransactions. The remaining 2.5 percent of publishers received revenue from both microtransactions and package sales.⁵⁷⁸ While I can measure which publishers rely on microtransactions using available data, the alleged PMFN may affect the decision of how heavily to rely on microtransactions. Therefore, assessing antitrust injury from the alleged PMFN requires individualized inquiry to assess those decisions in the but-for world.
338. **Whether a publisher’s pricing decisions are affected by an alleged PMFN also depends on the platforms a publisher offers its games on.** For example, some publishers offer their games only on Steam and may continue to do so even absent an alleged PMFN. An alleged PMFN would not directly affect these publishers’ pricing decisions. As another example, publishers can remove their games from Steam and sell to consumers directly, so publishers can limit the impact of the alleged PMFN by leaving Steam and self-publishing.⁵⁷⁹ As discussed in Section 6.1, publishers vary in their choice of platforms to distribute their games. The alleged PMFN could also lead publishers to choose different platforms.
339. Plaintiffs’ experts concede that the effect of the alleged PMFN would depend on publishers’ distribution options. Professor Rietveld describes how, if the alleged PMFN were in place, most publishers would not delist from Steam, but those that had “guaranteed compensation for doing so, such as Epic Games has done in its attempt to

⁵⁷⁶ See Section 2.1.4 above for a discussion of pricing strategies of video games as differentiated products.

⁵⁷⁷ Rietveld Report, ¶ 206 (“Under a scenario that encourages content differentiation, developers/publishers would have the flexibility and control to determine how to best supply heterogeneous player demand for their PC game content. However, such a scenario is in stark contrast to the current status of the PC game industry, in which PC game developers/publishers are subject to Valve’s content-parity requirements and left with just two unappealing options regarding content differentiation: (1) distribute identical content on Steam and other distribution platforms with uniform pricing, or (2) forego distributing content on Steam and distribute content through other distribution platforms.”).

⁵⁷⁸ Workpaper 46.

⁵⁷⁹ Note that when this occurs, PMFNs do not necessarily lead to increased consumer prices. See Bjørn Olav Johansen and Thibaud Vergé, “Platform price parity clauses with direct sales,” *University of Bergen Working Papers in Economics*, 2017 at p. 6 (“We argue that the claim that price parity clauses necessarily cause an increase in platform commissions (as in Boik and Corts (2016) and Johnson (2014)) rests on the (implicit or explicit) assumptions that suppliers are not competing against each other and/or are not able to choose where to distribute their products. Instead, we find that when we allow each supplier to choose whether to list on both platforms or only on one, in addition to selling directly, whether price parity clauses lead to higher or lower commissions depends on the degree of competition between the suppliers. In particular, we find that price parity clauses may simultaneously lead to higher profits for platforms and suppliers, and increase consumer surplus.”).

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make EGS a viable alternative to Steam,” may choose to remove their games from Steam and distribute through EGS exclusively.⁵⁸⁰

340. As explained in Section 6.1, comprehensive data on availability of games on other platforms were not produced in this matter; nor were comprehensive data on publishers’ distribution options, such as exclusivity offerings from Epic Games. Assessing the effect of the alleged PMFN on publishers requires data on each publisher’s different distribution options, and modeling which options the publisher would choose absent the alleged PMFN. This requires individualized inquiry.⁵⁸¹
341. Finally, contrasting Named Plaintiff Wolfire against other publishers on Steam provides an illustration of the need for individualized inquiry. Consumers can buy Wolfire’s games from Steam directly, through Steam keys on Humble, on third-party sites like itch.io, and on Wolfire’s website.⁵⁸² This contrasts with publishers who offer their games on additional platforms. For example, EA lists its games on console stores and the subscription service EA Play in addition to listing on Steam, other third-party PC platforms, and its own first-party platform.⁵⁸³ The extent to which the alleged PMFN would constrain Wolfire’s and EA’s pricing decisions on other platforms depends on the extent to which they would benefit from offering different prices on different platforms. Distinguishing how the alleged PMFN would differently affect EA and Wolfire requires individualized inquiry.

7.3. Valve does not exercise monopoly power through an anticompetitive content PMFN

342. In the previous sections, I assessed Plaintiffs’ claims that Valve causes common injury to publishers by enforcing a PMFN that restricts the prices that publishers offer on competing platforms. In this section, I assess Plaintiffs’ claims that the alleged PMFN also restricts the content that publishers offer on competing platforms.
343. Dr. Schwartz states that if, contrary to evidence from the pricing data, publishers could not offer lower prices outside of Steam, competing platforms could still differentiate

⁵⁸⁰ Rietveld Report, ¶ 207 (“Given Steam’s dominance of the PC game distribution platform market and the absence of viable alternatives, foregoing distribution on Steam is generally not a viable option for PC game developers/publishers—unless they are provided with guaranteed compensation for doing so, such as Epic Games has done in its attempt to make the Epic Games Store a viable alternative to Steam.”).

⁵⁸¹ Exhibit 19 and Exhibit 21 can only test whether the alleged PMFN affected prices for a sample of games. They cannot test for whether the alleged PMFN works through affecting availability of games across platforms.

⁵⁸² Steam, “Wolfire Games,” available at <https://store.steampowered.com/developer/wolfire>, accessed on May 15, 2024; Wolfire Games, “Games,” available at <https://www.wolfire.com/games>, accessed on April 19, 2024; Itch.io, “Wolfire Games,” available at <https://wolfiregames.itch.io/>, accessed on April 15, 2024; Humble Bundle, “Overgrowth,” available at <https://www.humblebundle.com/store/overgrowth>, accessed on April 18, 2024; Rosen, David Deposition, p. 222 (“Q. Did you set the same base price for Overgrowth on your website as on the Humble Store? ... [A]. I think so.”).

⁵⁸³ Electronic Arts, “EA games on PlayStation,” available at <https://www.ea.com/games/library/playstation>, accessed on May 15, 2024 (“No matter what your gaming needs are, EA’s got the PlayStation video games for you.”); Electronic Arts, “EA Play,” available at <https://www.ea.com/ea-play>, accessed on May 15, 2024 (“Subscribe today to get exclusive monthly rewards, a collection of EA’s best titles, trials of new EA games, and more for just \$5.99 a month.”); Steam, “Electronic Arts,” available at <https://store.steampowered.com/publisher/EA>, accessed on May 15, 2024; Epic Games, “EA Sports FC 24 Standard Edition,” available at <https://store.epicgames.com/en-US/p/ea-sports-fc-24>, accessed on May 15, 2024; Electronic Arts, “The EA App,” available at <https://www.ea.com/ea-app>, accessed on May 6, 2024 (“The EA app is Electronic Arts’ all-new, enhanced platform, where you can easily play your favorite games.”).

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themselves from Steam by distributing different content.⁵⁸⁴ Plaintiffs and Professor Rietveld claim that the alleged PMFN prevents publishers from offering different content across platforms.⁵⁸⁵ As evidence, Professor Rietveld cites the following language from the SDA:⁵⁸⁶

“If Company distributes the Application through any other (non-Steam) distribution channel, and if Company distributes any material DLC for the Application through that other channel, it will deliver the DLC to Valve at the same time such that Steam Account Owners will receive comparable DLC with customers acquiring the Application through other channels. Company is free to offer special and unique promotional content through other distribution channels, provided that material parity is maintained between Steam Account Owners and users of other distribution channels who make a comparable investment in the Application and the associated DLC.”

344. Plaintiffs’ experts claim that the alleged content PMFN impacts publishers in two ways: (a) by preventing publishers from catering to different audiences on different platforms, and (b) by preventing publishers from steering consumers to different platforms with different content.⁵⁸⁷

345. Record evidence that Plaintiffs’ experts rely on suggests that the alleged content parity restriction would not prevent publishers from offering different content on competing platforms. Instead, the evidence that Plaintiffs’ experts cite suggests that publishers can offer different content on different platforms so long as they offer differentiated content on Steam as well. For example, the documentation from the SDA (quoted above) that Professor Rietveld relies on states that publishers are “free to offer special and unique promotional content through other distribution channels.”⁵⁸⁸ Professor Rietveld also cites to emails where Valve employees tell publishers that “If you’re making the special

⁵⁸⁴ Schwartz Report, ¶ 171 (“In the absence of meaningful price competition, a rival platform must employ other methods to differentiate itself from Steam. One such example could be to provide different content on platforms other than Steam to entice customers. However, the PMFN Policy restricts that competition, as well.”).

⁵⁸⁵ Rietveld Report, ¶ 218 (“Absent Valve’s content-parity requirements, competing platforms could better cater to different audiences by offering game versions that are differentiated from their Steam equivalents.”).

⁵⁸⁶ Rietveld Report, ¶ 198 (quoting Deposition of Eric Peterson, 30(b)(6) (Valve), November 15, 2023, Exhibit 295).

⁵⁸⁷ Rietveld Report, ¶¶ 210 (“The existence of distinct preferences among different platforms’ user bases has important implications for PC game publisher/developer product development and marketing strategies across platforms, implying the need for differentiation and the need for a tailored approach from one platform to the next. Absent Valve’s content-parity requirements, publishers could implement platform-exclusive features and content, such as those seen within the console segment of the video game market.”), 212 (“In addition to catering to unique preferences of a platform’s user base, in the absence of Valve’s content-parity requirements, developers/publishers could also use differentiated PC game content to steer consumers towards particular distribution platforms. For example, publishers could use exclusive in-game content to steer consumers towards third-party distribution platforms with more favorable commission rates, or towards platforms that offer incentives to the publisher in exchange for exclusive in-game content.”); Schwartz Report, ¶ 171 (“In the absence of meaningful price competition, a rival platform must employ other methods to differentiate itself from Steam. One such example could be to provide different content on platforms other than Steam to entice customers. However, the PMFN Policy restricts that competition, as well.”).

⁵⁸⁸ Rietveld Report, ¶ 198 (quoting Deposition of Erik Peterson, 30(b)(6), November 15, 2023, Exhibit 295) (“If Company distributes the Application through any other (non-Steam) distribution channel, and if Company distributes any material DLC for the Application through that other channel, it will deliver the DLC to Valve at the same time such that Steam Account Owners will receive comparable DLC with customers acquiring the Application through other channels. Company is free to offer special and unique promotional content through other distribution channels, provided that material parity is maintained between Steam Account Owners and users of other distribution channels who make a comparable investment in the Application and the associated DLC.”).

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Red sword for people who buy the PC game at Gamestop, and a special Yellow sword for people who buy the PC game from Gameloft Store, that's fine! But make a Blue sword for people who buy the PC game from Steam.”⁵⁸⁹

346. To illustrate his claims about how the alleged content parity requirement would restrict publishers' content decisions, Professor Rietveld cites the example of platform-specific characters in *Soul Calibur II*. He explains how Namco, *Soul Calibur II*'s publisher, offered different unique characters on different consoles. Professor Rietveld then assumes, without evidence, that Valve would not allow this type of differentiation for games offered on Steam.⁵⁹⁰ Record evidence suggests that Professor Rietveld's assumption is not true; in a situation where other platforms have platform-specific characters, Valve would not prevent other platforms from having their own platform-specific characters. Instead, Valve would want a specific character too.⁵⁹¹
347. If publishers can offer different content on different platforms, neither of Plaintiffs' experts' theories of how the alleged content parity requirement impacts publishers hold. Professor Rietveld claims that “Different platforms can cater to certain segments of the broad heterogenous PC player market,”⁵⁹² but he has not shown that Valve prevents publishers from releasing exclusive content on other platforms, so long as “comparable DLC” is offered on Steam.⁵⁹³ Publishers could use these differentiated offerings to cater to different audiences on different platforms.

7.4. Whether the alleged content PMFN would impact publishers depends on individual factors

348. In the previous section, I showed that record evidence is at odds with Plaintiffs' experts' claim that Valve prevents publishers from offering different content on other platforms. In this section, I show that the extent to which the alleged content parity requirement

⁵⁸⁹ Rietveld Report, ¶ 199 (quoting Deposition of Thomas Giardino, November 2, 2023, Exhibit 196).

⁵⁹⁰ Rietveld Report, ¶¶ 210–211 (“For example, Namco, the publisher of the cross-platform console game *Soul Calibur II*, featured different ‘guest characters’ in the PlayStation 2, Xbox, and GameCube versions of the game. In particular, the Nintendo GameCube version of *Soul Calibur II* featured the Nintendo-exclusive character Link from the *Legend of Zelda* series of games, the PlayStation 2 version featured Heihachi Mishima from the (at the time) PlayStation-exclusive *Tekken* series of games, and the Xbox version featured the comic book character Spawn.”). Tailoring *Soul Calibur II* to different platforms in this manner allowed Namco to increase the appeal of its game among each different platforms' respective user base, likely increasing the game's sales. *Soul Calibur II* illustrates how content-parity requirements can negatively impact product quality: If Namco had been required to maintain content-parity across console platforms, it is unlikely Nintendo would have permitted Namco to feature Nintendo's Link character in non-Nintendo *Soul Calibur II* game versions, and thus it is unlikely any version of *Soul Calibur II* would have featured Link. Absent Valve's parity requirements, publishers could employ similar content differentiation strategies across PC game platforms, resulting in a better match between games and their respective platforms' user bases and thus benefit both publishers and players.”).

⁵⁹¹ Email chain from Tom Giardino to [REDACTED], “RE: Price and release parity question,” October 27, 2021, VALVE_ANT_1200520–522 at 521 (“If you're making the special Red sword for people who buy the PC game at Gamestop, and a special Yellow sword for people who buy the PC game from Gameloft Store, that's fine! But make a Blue sword for people who buy the PC game from Steam.”).

⁵⁹² Rietveld Report, ¶ 208 (“Different platforms can cater to certain segments of the broad heterogenous PC player market. For example, research has found that newer platforms tend to have a higher concentration of early innovation adopters relative to more established platforms, which appeal to a mix of early and late adopters.”).

⁵⁹³ Motion for Class Certification, p. 7 (quoting SDA § 2.4) (“If Company distributes the Application through any other (non-Steam) distribution channel, and if Company distributes any material DLC for the Application through that other channel, it will deliver the DLC to Valve at the same time such that Steam Account Owners will receive comparable DLC with customers acquiring the Application through other channels. Company is free to offer special and unique promotional content through other distribution channels, provided that material parity is maintained between Steam Account Owners and users of other distribution channels who make a comparable investment in the Application and the associated DLC.”).

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would impact (if at all) each publisher depends on highly individualized factors. For example, some publishers may prefer to offer the same content across platforms; these publishers may not be affected by the alleged restriction on content. For publishers who prefer to offer different content across platforms, whether the alleged content parity applies to their games depends upon context. Moreover, the alleged content PMFN could also affect a publisher’s decision of which content to publish and where to publish content. In fact, some publishers may be *worse off* in a but-for world where the alleged content parity is removed. Establishing antitrust injury from the alleged content PMFN would require individualized inquiry into proposed class members’ business decisions and how those decisions would change (if at all) in the but-for world. Plaintiffs’ experts cannot establish common impact of the alleged restrictions on content using common evidence.

349. Publishers vary in whether they offer different content and whether that content is subject to the alleged content parity requirement; there is no common evidence to identify these differences, so assessing antitrust injury would require individualized inquiry. As explained below, the available data cannot identify whether publishers create multiple versions of their games. Furthermore, for publishers who do release multiple versions of their games across platforms, it is not possible to assess antitrust injury with a common method and common evidence.
350. **First, the available data cannot identify whether a given publisher offers different content across platforms.** As explained in Section 2, some publishers prefer to create only one standard version of their games. For example, *Team Fortress Classic* is available only on Steam, and has a single edition.⁵⁹⁴ By contrast, other publishers may release standard editions *alongside* “complete” editions containing additional content or offer standard editions with DLC sold separately. For example, *Persona 4 Golden* has two editions on Steam: the standard edition and the digital deluxe edition.⁵⁹⁵ *Call of Duty: Black Ops* has several DLC items, including the *First Strike DLC*. The *First Strike DLC* includes new multiplayer maps and is sold separately from the game.⁵⁹⁶
351. In order for the alleged content parity to restrict a publisher’s decisions, a publisher must prefer to make multiple versions of its games. However, I cannot identify which publishers in the proposed class prefer to create multiple versions of their games without individualized inquiry. Among publishers on Steam, 78 percent release only one version of their games on Steam.⁵⁹⁷ However, I cannot determine whether these publishers offer different versions of their games on other platforms. Doing so would

⁵⁹⁴ *Team Fortress Classic* is the only game on Steam with a [REDACTED]. See Workpaper 47.

⁵⁹⁵ These two editions of *Persona 4 Golden* have a [REDACTED]. See Workpaper 47.

⁵⁹⁶ Steam, “Call of Duty®: Black Ops First Strike Content Pack,” available at https://store.steampowered.com/app/42716/Call_of_Duty_Black_Ops_First_Strike_Content_Pack/, accessed on April 22, 2024 (“First Strike contains 5 incredibly diverse maps spanning the globe; featuring 4 new multiplayer maps and a new Zombie experience.”). *Call of Duty: Black Ops* and its DLC have a [REDACTED]. See Workpaper 47.

⁵⁹⁷ Workpaper 48. I define a game as being the only version on Steam if that game is the only game with a given [REDACTED]. This figure excludes Valve and only considers [REDACTED] that appear in the data during the proposed class period. For example, if a [REDACTED] has multiple games that only appear in the data prior to the proposed class period and one game that appears during the proposed class period, the publisher for that [REDACTED] would be counted as only having one version of their games on Steam.

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require data on all games—and versions of those games—that each publisher released on all platforms, including the publisher’s self-distribution channel.⁵⁹⁸ These data have not been produced and obtaining them would require extensive individualized inquiry.

352. **Second, for publishers who do release multiple versions of their games across platforms, it is not possible to assess antitrust injury with common evidence.** As discussed in Section 7.3, Valve does not require content to be *identical* across platforms. Rather, Valve asks “that material parity is maintained between Steam Account Owners and users of other distribution channels,” so whether differences in content are subject to the alleged content parity requirement depends on context.⁵⁹⁹ For example, as noted above, to explain the alleged content parity, Professor Rietveld cites an email where a Valve employee tells a publisher that “If you’re making the special Red sword for people who buy the PC game at Gamestop, and a special Yellow sword for people who buy the PC game from Gameloft Store, that’s fine! But make a Blue sword for people who buy the PC game from Steam.”⁶⁰⁰ Determining whether a publisher responded by making a “Blue sword for people who buy the PC game from Steam” is an individualized process that will vary from game to game. Professor Rietveld acknowledges that the type of content that would be subject to the alleged content parity can range from content that customers purchase for “simple aesthetic reasons” to entirely new game content, including “new levels, new characters, and new maps.”⁶⁰¹ Assessing whether the different types of content that each publisher makes are subject to the alleged parity requirement and how a publisher responded is not possible with common evidence.

353. **Assessing the variety of differentiated content offered by publishers in the but-for world requires individualized inquiry.** As Professor Rietveld explains, the alleged content parity requirement could affect a publisher’s decision of what content to release and where to release it. Professor Rietveld claims that “were it not for Valve’s content-parity requirements, PC game developers/publishers would increase content differentiation across and within PC game distribution platforms.”⁶⁰² Determining whether a publisher would release more versions of their games in a but-for world, and where it would offer the different versions, is not possible without individualized inquiry. The individualized inquiry would require publisher-level

⁵⁹⁸ I cannot use ITAD data to determine what platform a game is offered on. This is because the data only contains information on a sample of games on a sample of platforms. For example, it does not contain information on which games are offered on small publishers’ websites. Further, there is not a systematic way to link different versions of different games to one another. The ITAD data identifies games by their names, and different versions of the same game may have different names. There is not a systematic way to identify which of these different names correspond to different versions of the same game.

⁵⁹⁹ Motion for Class Certification, p. 7 (quoting SDA § 2.4) (“Company is free to offer special and unique promotional content through other distribution channels, provided that material parity is maintained between Steam Account Owners and users of other distribution channels who make a comparable investment in the Application and the associated DLC.”).

⁶⁰⁰ Rietveld Report, ¶ 199 (quoting Deposition of Thomas Giardino, November 2, 2023, Exhibit 196).

⁶⁰¹ Rietveld Report, ¶ 119 (“DLC is additional (downloadable) content, sometimes referred to as ‘in-game content,’ that players can purchase within a game. DLC is often combined with other monetization models such as buy-to-play, free-to-play, and in-game currency. Historically, this content included expansion packs, new levels, new characters, and new maps. Today, many developers/publishers offer additional content that players can purchase to give them an advantage in the game or for simple aesthetic reasons.”).

⁶⁰² Rietveld Report, ¶ 215 (“For at least the reasons discussed above, were it not for Valve’s content-parity requirements, PC game developers/publishers would increase content differentiation across and within PC game distribution platforms and supply the heterogeneous demand for PC games more effectively.”).

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information to model a publisher’s choice of content under various incentives. For example, publishers who offer games that are already available on multiple platforms might find it easier to offer differentiated content across platforms and therefore might be more likely to offer differentiated content in a but-for world without the alleged content parity requirement.

354. In fact, some publishers may be worse off in a but-for world without the alleged content parity requirement. In the actual world, some publishers receive payments to offer exclusive content on other platforms. In a but-for world, competing platforms may not offer these payments. Professor Rietveld claims that “With the existence of Valve’s content-parity requirements in the PC game industry, competing platforms can currently only meaningfully differentiate the content of their offerings through games that are not available through Steam.” To do so, competing platforms make payments to publishers to not list their games on Steam. Professor Rietveld claims that in a but-for world without the alleged content parity requirement, “competing platform[s] would not need to compensate the publisher for not distributing its game through Steam.” He further claims that instead, “publishers would be incentivized to offer differentiated content across platforms *without further incentive from the platform owner*” (emphasis added).⁶⁰³ If competing platforms stopped offering these payments, publishers who currently benefit from these payments may be worse off in the but-for world.⁶⁰⁴
355. For example, in 2020, Epic Games paid publishers \$444 million to release their games exclusively on EGS and to stay outside of Steam for a year.⁶⁰⁵ Similarly, Epic Games now offers a zero percent revenue share for the first six months that a publisher sells a game exclusively on EGS.⁶⁰⁶ In a but-for world without the alleged content parity

⁶⁰³ Rietveld Report, ¶¶ 217–218 (“With the existence of Valve’s content-parity requirements in the PC game industry, competing platforms can currently only meaningfully differentiate the content of their offerings through games that are not available through Steam. However, unless a competing platform is willing to pay large amounts of money to a publisher in return for game exclusivity, as Epic Games is attempting to do with the Epic Games Store, it is unlikely that a given publisher will make its games exclusively available through non-Steam platforms. This is because non-Steam platforms cannot provide similarly large player bases for these game publishers to distribute their games to. Thus, in light of Valve’s content-parity requirements, competing platforms are limited to forms of content-based differentiation that are cost prohibitive for rival platforms and largely unsustainable. Absent Valve’s content-parity requirements, competing platforms could better cater to different audiences by offering game versions that are differentiated from their Steam equivalents. From the perspective of a competing platform, acquiring exclusive in-game content or DLC from a publisher would be easier and less expensive than acquiring full game exclusivity, given that the competing platform would not need to compensate the publisher for not distributing its game through Steam. Further, given the heterogeneity in user preferences across different platforms, publishers would be incentivized to offer differentiated content across platforms without further incentive from the platform owner.”).

⁶⁰⁴ Like the procompetitive effects discussed in Section 7.2.2 above, this is another situation where determining whether the procompetitive effects outweighed allegedly anticompetitive effects would require individualized assessment.

⁶⁰⁵ Tyler Wilde, “Epic will lose over \$300M on Epic Games Store exclusives, is fine with that,” *PC Gamer*, April 10, 2021, available at <https://www.pcgamer.com/epic-games-store-exclusives-apple-lawsuit/>, accessed on April 20, 2024 (“To take on Steam, Epic Games has spent the past two years shoveling Fortnite money into the Epic Games Store, making over 100 exclusivity deals and giving away free games every week. We knew Epic was spending a lot of cash to get customers onto its store, but didn’t have many specifics until now. Thanks to Epic’s big legal fight with Apple, we learned this week that Epic committed around \$444 million to Epic Game Store exclusivity deals in 2020 alone. Phew. More precisely, that’s \$444 million on ‘minimum guarantees’ for games that release on the Epic Games Store but stay off of Steam for a year. A ‘minimum guarantee’ is just another way to refer to an advance: It means that Epic guarantees the publisher a certain amount of money whether or not their game actually sells enough to cover it.”).

⁶⁰⁶ Epic Games, “Boost your revenue share from 88% to 100% with Epic First Run,” available at <https://store.epicgames.com/en-US/features/epic-first-run-program>, accessed on April 20, 2024 (“Epic First Run is an opt-in exclusivity program that offers third-party developers 100% net revenue of user spending on eligible products in their first six

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requirement, competing platforms like EGS may be less likely to compensate publishers in exchange for releasing their games exclusively on its platform.

356. Assessing whether a publisher would be worse off in a but-for world requires individualized inquiry. Consider the example of *Control*, a game published by 505 Games that was distributed exclusively on EGS.⁶⁰⁷ Whether 505 Games would be worse off in a but-for world without the alleged content parity requirement depends on several factors:

- a. Epic Games paid 505 Games \$10.45 million upfront to distribute *Control* on EGS exclusively.⁶⁰⁸ Professor Rietveld claims that, in a but-for world, publishers would differentiate their content across platforms “without further incentive from the platform owner,”⁶⁰⁹ and that “Epic Game’s efforts [to provide exclusive content] would be less costly, more effective, or a combination of both.”⁶¹⁰ This suggests that Epic Games may not offer an exclusivity payment in a but-for world. If so, 505 Games could be worse off. Assessing whether Epic Games would have offered this payment in a but-for world requires individualized inquiry into data to model the types of content 505 Games would have offered on EGS absent the alleged content PMFN.
- b. Second, 505 Games paid 55 percent (\$5.75 million) of the payment from Epic Games to Remedy, *Control*’s developer.⁶¹¹ This affects 505 Games’ and Remedy’s alleged damages if Epic Games did not offer this deal in the but-for world. As I discussed in Section 2.1.1, relationships between publishers and developers vary, and the structure of these relationships would affect whether and to what extent the publisher or the developer would be impacted if EGS stopped paying for exclusivity.

months of exclusivity on the Epic Games Store. When the exclusivity period ends, the revenue share captured from user spending will revert to 88%/12%.”).

⁶⁰⁷ *Control* released on Steam after the end of its exclusivity period. See Steam, “Control Ultimate Edition,” available at https://store.steampowered.com/app/870780/Control_Ultimate_Edition/, accessed on May 14, 2024 (“Release date: Aug 27, 2020”).

⁶⁰⁸ Jody Macgregor, “Epic paid \$10.45 million for Control’s exclusivity,” *PC Gamer*, September 21, 2019, available at <https://www.pcgamer.com/epic-paid-dollar1045-million-for-controls-exclusivity/>, accessed on April 20, 2024 (“The PC version of Remedy’s *Control* is exclusive to the Epic Games Store, and thanks to a financial report from Digital Bros—the parent company of *Control*’s publisher 505 Games—we know how much Epic paid for that exclusivity: €9.49 million, which translates to just over \$US10.45 million.”).

⁶⁰⁹ Rietveld Report, ¶ 218 (“Absent Valve’s content-parity requirements, competing platforms could better cater to different audiences by offering game versions that are differentiated from their Steam equivalents. From the perspective of a competing platform, acquiring exclusive in-game content or DLC from a publisher would be easier and less expensive than acquiring full game exclusivity, given that the competing platform would not need to compensate the publisher for not distributing its game through Steam. Further, given the heterogeneity in user preferences across different platforms, publishers would be incentivized to offer differentiated content across platforms without further incentive from the platform owner.”).

⁶¹⁰ Rietveld Report, ¶ 222 (“To illustrate, the Epic Games Store tries to compete on both value and price—it provides exclusive content for consumers (high value) and lower commission rates to developers (lower price). However, these strategies are exceedingly expensive on both dimensions because (1) Epic Games must pay developers/publishers, or provide them with guarantees, to not distribute their games through Steam at all because publishers/developers cannot offer differentiated content without violating Steam’s content-parity requirements, and (2) developers/publishers cannot pass on cost savings to consumers without violating Steam’s price-parity requirements. In the absence of Valve’s parity requirements, it is likely that Epic Game’s efforts would be less costly, more effective, or a combination of both.”).

⁶¹¹ Jody Macgregor, “Epic paid \$10.45 million for Control’s exclusivity,” *PC Gamer*, September 21, 2019, available at <https://www.pcgamer.com/epic-paid-dollar1045-million-for-controls-exclusivity/>, accessed on April 20, 2024 (“505 Games takes 45% of that amount, leaving 55% for Remedy—which works out to around \$US5.75 million.”).

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Determining the extent to which the publisher or the developer would be impacted requires individualized inquiry into the details of these relationships.

- c. Third, the payment from Epic Games was structured as an advance on revenue share payments. 505 Games did not receive any additional payments from Epic Games until it earned enough to cover the advance.⁶¹² How much 505 Games benefited from this payment depends on whether *Control*’s sales in the but-for world offset the benefit of the upfront payment in the actual world.
357. For some exclusivity deals, there are less data available than the example above. For example, 505 Games has a different exclusivity agreement with Epic Games for another game it publishes, *Journey to the Savage Planet*. However, there is no publicly available data on Epic Games’ upfront payment.⁶¹³ Again, I cannot assess whether 505 Games benefited from the payment, or whether Epic Games would have offered this payment in a but-for world without individualized inquiry. Furthermore, *Journey to the Savage Planet* has a different developer, Typhoon Studios, than *Control*, and data on the relationship between 505 Games and Typhoon Studios were not produced.
358. Data on which publishers were offered payments from competing platforms, and the terms of those payments, were not produced and would require individualized inquiry. Obtaining this information is essential to understanding publisher incentives in the actual world and how incentives might change in the but-for world. Therefore, assessing which publishers would be worse off in a but-for world requires individualized inquiry.
359. Finally, even if publishers did systematically offer additional content on lower-fee platforms, it is not clear that consumers would choose to buy from these platforms. Professor Rietveld claims that “were it not for Valve’s content-parity requirements, PC game developers/publishers would increase content differentiation across and within PC game distribution platforms,”⁶¹⁴ but increased content differentiation would not necessarily benefit publishers. As discussed in Section 7.1.2, it is not clear that offering lower prices or different content on lower-fee platforms would successfully steer consumers to those lower-fee platforms. Further, removing content from a consumer’s preferred platform to make it exclusive elsewhere may alienate consumers.⁶¹⁵

⁶¹² Jody Macgregor, “Epic paid \$10.45 million for *Control*’s exclusivity,” *PC Gamer*, September 21, 2019, available at <https://www.pcgamer.com/epic-paid-dollar1045-million-for-controls-exclusivity/>, accessed on April 20, 2024 (“This kind of payout is typically given as an advance on royalties, which means that Remedy and 505 Games won’t see any further payments for *Control* until after it earns back that advance.”).

⁶¹³ Jody Macgregor, “Epic paid \$10.45 million for *Control*’s exclusivity,” *PC Gamer*, September 21, 2019, available at <https://www.pcgamer.com/epic-paid-dollar1045-million-for-controls-exclusivity/>, accessed on April 20, 2024 (“505 Games also signed an exclusivity deal with Epic for another game they’re publishing, Typhoon Studios’ *Journey to the Savage Planet*, which is due out in 2020.”).

⁶¹⁴ Rietveld Report, ¶ 215 (“For at least the reasons discussed above, were it not for Valve’s content-parity requirements, PC game developers/publishers would increase content differentiation across and within PC game distribution platforms and supply the heterogeneous demand for PC games more effectively.”).

⁶¹⁵ Unfold Games, “Why I turned down exclusivity deal from the Epic Games Store,” *Medium*, August 17, 2019, available at <https://medium.com/@unfoldgames/why-i-turned-down-exclusivity-deal-from-the-epic-store-developer-of-darq-7ee834edoac7>, accessed on May 3, 2024 (“I had just announced the DARQ release date on Steam - pulling the game off Steam a few days after Steam release date announcement would forever ruin the credibility of my studio. I would like for my customers to have confidence that my word means something, especially when making announcement as crucial as release date / platform. Turning down the Epic exclusivity offer might have been a foolish decision in the short term, considering the amount of money that might have been involved. When thinking long term, however, this was an easy & obvious decision to make (in my case).”).

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360. In sum, it is not possible to determine which publishers would be impacted or unaffected by the alleged content parity with common proof. Analyzing the effect of the challenged conduct on proposed class members requires individualized proof.

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8. DR. SCHWARTZ’S “EMPIRICAL” APPROACH IS FLAWED AND INCAPABLE OF DEMONSTRATING CLASS-WIDE INJURY

361. In Sections 3 and 4, I discussed how Valve’s reduction of its revenue share rate in 2018 was a response to competition and that it provides evidence of demand substitution between first- and third-party platforms. In this section, I show how Dr. Schwartz mischaracterizes this event in what he calls an “empirical” approach to establish class-wide injury. I conclude that Dr. Schwartz’s “empirical” approach is technically flawed and incapable of demonstrating class-wide harm with common evidence.⁶¹⁶
362. Dr. Schwartz claims that the “empirical” approach investigates what insights about Valve’s revenue shares in a but-for world can be learned from prior real-world events.⁶¹⁷ In this approach, Dr. Schwartz presents his view of Valve’s response to competition from firms such as EA, Epic Games, Ubisoft, and others, and extrapolates it to infer how Valve might change its revenue share in the but-for world.⁶¹⁸ Dr. Schwartz’s “empirical” approach is flawed for two reasons. First, it undermines his characterization of Valve as a monopolist by describing the dynamics of a competitive industry. Second, it does not show (and is not capable of showing) class-wide antitrust impact with class-wide evidence as it provides no evidence that Valve would adjust its revenue shares in a class-wide way in his but-for world.
363. First, the industry dynamics that Dr. Schwartz describes in his “empirical” approach are inconsistent with his assertion that Valve has monopoly power. Rather, his “empirical” approach describes a marketplace where Valve has faced and continues to face competition from a variety of firms in the industry. While Dr. Schwartz focuses on EGS, he concedes that other firms, including EA and Ubisoft, applied competitive pressure on Valve by launching PC platforms in 2011 and 2012.⁶¹⁹ Scott Lynch, Valve’s Chief Operating Officer, testified that Valve wanted to stay competitive with other stores and in 2018 considered ways to bring games from large publishers like EA and Ubisoft back to Steam and how to attract popular games that had never been on Steam like *League of Legends* from Riot Games, *Minecraft* from Mojang (which Microsoft acquired in 2014), *Fortnite* from Epic Games, and hit games from independents.⁶²⁰ In addition to the

⁶¹⁶ Schwartz Report, ¶ 243 (“Approach 3: I look to empirical evidence from the PC gaming market to determine the impact of limited (and ultimately transitory) outbreaks of competition.”). Dr. Schwartz takes three approaches to establishing class-wide impact. He proposes a “Platform Competition Model,” a “yardstick,” and an “empirical” approach. However, I do not address Dr. Schwartz’s implementation of his Platform Competition Model or his yardstick approaches as they are beyond the scope of my assignment. I understand that Professor Ashley Langer addresses Dr. Schwartz’s implementations of these two approaches.

⁶¹⁷ Schwartz Report, ¶ 302 (“I also deploy an empirical approach, which looks to the actual-world facts and circumstances to see if any economic insights can be gleaned from Valve’s reactions and responses to real world events”).

⁶¹⁸ Schwartz Report, ¶ 302 (“[S]tudying the economic effects of these entry attempts sheds some light into what a but-for world free of Valve’s anticompetitive parity enforcement may look like”).

⁶¹⁹ Schwartz Report, ¶¶ 308 (“Concern over Epic’s entry and threat of potential competition in the third-party digital PC game distribution via platforms market directly led to Valve’s tiered commission rate change”), 302 (“Nonetheless, some platforms did enter the marketplace during the class period, e.g. EA, Ubisoft, Epic, and others”); Electronic Arts, “EA Launches Origin,” June 3, 2011, available at https://s22.q4cdn.com/894350492/files/doc_news/archive/582630.pdf, accessed on April 17, 2024; Mike Williams, “Ubisoft launches Uplay PC digital distribution platform,” *GamesIndustry.biz*, August 16, 2012, available at <https://www.gamesindustry.biz/ubisoft-launches-uplay-pc-digital-distribution-platform>, accessed on April 19, 2024.

⁶²⁰ Lynch 30(b)(6) Deposition, pp. 111–115; Ben Kuchera, “Microsoft spent \$2.5 billion on Minecraft to buy the next generation of players,” *Polygon*, September 15, 2014, available at <https://www.polygon.com/2014/9/15/6151813/microsoft-minecraft-mojang-purchase>, accessed on May 16, 2024 (“Microsoft didn’t buy Mojang, although that’s what both companies are going to say. Microsoft bought *Minecraft*. The deal was announced this morning, and the purchase amount was confirmed to be \$2.5 billion.”).

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publishers and games Mr. Lynch discussed, another Valve employee expressed that “the real impetus for this policy change is AAA flight from the platform.”⁶²¹ Responses from publishers suggest that Valve’s strategy was successful. After Valve introduced its new tiered revenue shares, publishers such as Microsoft, Activision Blizzard, EA, Ubisoft, and Bungie, who had either pulled content from Steam in favor of their own or other platforms, or had not previously published on Steam, began to list their titles on Steam.⁶²² Pressure from a broad range of competitors led Valve to lower its revenue share, including competitors Dr. Schwartz excludes from his proposed market.

364. By structuring its new revenue shares to benefit firms who publish the highest selling games, Steam benefits all users of its platform:

- a. Some publishers benefited directly from their additional revenue shares for high-revenue games. This change led to a decrease in Valve’s average nominal revenue share from 30.0 percent prior to the introduction of the additional revenue shares in 2018 to █████ percent in 2022.⁶²³ A full █████ percent of revenues from sales on Steam were subject to the additional revenue share tiers, transferring more than █████ to █████ publishers, between October 2018 and December 2022.⁶²⁴
- b. Consumers also benefited due to enhanced network effects. As the economic literature recognizes,⁶²⁵ attracting more publishers and popular games can benefit consumers through, for example, increasing game availability and increasing

⁶²¹ Email chain from Kristian Miller to Tom Giardino, “RE: Rev Share Change on Past Year Titles,” October 2, 2018, VALVE_ANT_2392320–323 at 320.

⁶²² Agreement between Valve Corporation and █████, “Valve Corporation Steam Distribution Agreement,” March 1, 2021, VALVE_ANT_0022289–308; Agreement between Valve Corporation and █████, “Valve Corporation Steam Distribution Agreement,” October 25, 2019, VALVE_ANT_0039631–650; Agreement between Valve Corporation and █████, “Valve Corporation Steam Distribution Agreement,” June 4, 2019, VALVE_ANT_0024601–617; Kyle Orland, “Ubisoft comes crawling back to Steam after years on Epic Games Store,” *Ars Technica*, November 22, 2022, available at <https://arstechnica.com/gaming/2022/11/ubisoft-comes-crawling-back-to-steam-after-years-on-epic-games-store/>, accessed on April 17, 2024 (“A page for 2020’s Assassin’s Creed Valhalla was officially added to Steam Monday, listing a December 6 launch date on the platform. Ubisoft has also told Eurogamer that 2019’s Anno 1800 and Roller Champions will be coming to Steam ... The coming Steam versions are Ubisoft’s first non-DLC releases on the platform since 2019 ... Ubisoft’s return to Steam comes after Activision Blizzard ended a similar years-long Steam absence for the ultra-popular Call of Duty franchise. This year’s Call of Duty: Modern Warfare 2 was the first series game to appear on Steam since 2017’s Call of Duty WW2, with intervening releases available only on Activision Blizzard’s Battle.net launcher.”).

⁶²³ Workpaper 16. █████
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⁶²⁴ Workpaper 49. The transfer of revenue as a result of the additional revenue share tiers is calculated by taking the difference between 30 percent (i.e., the standard revenue share rate) and Dr. Schwartz’s calculated take rate times net sales.

⁶²⁵ Rysman 2009, p. 131 (“In addition, two-sided markets allow for a new form of price discrimination: discrimination based on heterogeneity in the attractiveness of an agent to the other side. For instance, supermarkets resisted accepting payment cards for a time, but they are highly desirable clients for payment card companies both because of their transaction volume and because regular consumer usage at supermarkets helps encourage consumer usage in other situations. Hence, payment associations offered supermarkets relatively low interchange fees, which led to low bank fees and ultimately to the adoption of payment card usage by supermarkets. Similarly, Sony and Microsoft have given Electronic Arts, the largest game manufacturer, advantageous contracts in order to attract games to their consoles.”).

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participation from other consumers in Steam’s social features.⁶²⁶ Dr. Schwartz acknowledges that “users want to be on Steam where there are better features, more users, more developers, and more games.”⁶²⁷ Also, the revised revenue share tiers targeted popular games, so the benefits reached a wider consumer audience than if Valve had chosen an alternative policy targeting smaller games, as Mr. Lynch explained in his deposition.⁶²⁸

- c. Sellers on a two-sided platform benefit from a wide range of consumers on the other side of the platform.⁶²⁹ As Steam became a more attractive platform for consumers, it also became a more attractive platform for all publishers. Even publishers of titles that did not qualify for the additional revenue share tiers benefited from the expanded consumer base the new publishers and games attracted.

365. Second, Valve’s introduction of tiered revenue shares represented a significant response to competition, but this response affected publishers differently—not class-wide—according to their games’ sales to both consumers already on Steam and any additional sales that individual publishers made to newly attracted consumers who saw and purchased their games. High-revenue games received significant additional revenue shares, whereas smaller revenue games received no additional revenue share, but many likely benefited indirectly from the additional games and players attracted by the revenue share change. This differential treatment makes economic sense given the network effects present in a two-sided market such as this one. Lower-revenue titles benefited by gaining access to additional players, not by a reduced revenue share. Dr. Schwartz acknowledges that many publishers did not directly benefit from this policy change.⁶³⁰

366. Dr. Schwartz attempts to address this lack of class-wide effect in publishers’ benefits from Valve’s change to a tiered revenue structure by assuming that if Steam faced

⁶²⁶ Valve employees have also noted that, in their experience, this larger user base also benefits smaller, less popular games. See Miller Deposition, pp. 39–40 (“Q. ... And how did the shift to the earn-up model enhance Steam as a marketplace for publishers? A. It made the larger games on Steam, which we’d found to benefit all games on Steam, more well compensated for kind of the positive effects they had on the rest of the market. Q. What do you mean by the positive effects that larger games have on the rest of the market? A. That larger games, in our experience, bring more users, and that forms a larger user base to benefit smaller games.”).

⁶²⁷ Schwartz Report, ¶ 310 (“In the framing of Boik and Corts, because Epic entered as a low-cost alternative, its strategy of competing on price is thwarted by Steam’s monopoly power and PMFN policy; consumer price has to be equal, and thus, users want to be on Steam where there are better features, more users, more developers, and more games. Because of Valve’s expansive base of users, developers, and publishers, Epic has had to focus on growth as opposed to profitability, all the while accomplishing neither to a meaningful degree.”).

⁶²⁸ Lynch 30(b)(6) Deposition, p. 110 (“one of the reasons that we wanted to do the change was the impact that, you know, games with lots of users can have on other -- other developers’ games or other partner games; the positive aspects of that and the positive aspects of, you know, just in general lots of games, users like that.”). Out of all the consumer spending on Steam since October 2018, 59 percent was subject to additional revenue share rates. See Workpaper 49. These titles also occupy an outsized share of user play time—these game titles were associated with 75 percent of all of the time users spent playing games on Steam, according to Valve’s lifetime playtime data. See Workpaper 50; Appendix Section 17.3.3.

⁶²⁹ Rysman 2009, p. 125 (“In the case of a video game system, the intermediary is the console producer—Sony in the scenario above—while the two sets of agents are consumers and video game developers. Neither consumers nor game developers will be interested in the PlayStation if the other party is not.”).

⁶³⁰ Schwartz Report, ¶ 308 (“Steam’s tiered commission structure represents a limited response to the competitive challenge it perceived in 2018, limiting the benefits to a relatively small number of publishers while changing nothing for the vast majority of publishers.”). As described above, while many publishers did not directly qualify for reduced revenue share tiers, due to the two-sidedness of the platform these publishers still benefited from the network effects and strong consumer presence associated with providing incentives to the publishers of the most popular titles on the platform.

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“multiple credible competitors” in his but-for world who “sought to attract the largest games to their platforms,” then Steam’s revenue shares would fall for both high-revenue games with revenue shares of 20 or 25 percent in the new tiers and lower-revenue games currently paying 30 percent.⁶³¹ This assumption is at odds with Valve’s response to competition in the actual world, where Valve reduced its revenue shares in a *non-class-wide* way.⁶³² Dr. Schwartz provides no basis for his assumption that revenue share reductions from allegedly increased competition in his but-for world would be made class-wide when they were not in the actual world.⁶³³

367. In sum, Dr. Schwartz’s “empirical” approach cannot be used to show class-wide antitrust impact with class-wide evidence. His approach shows a competitive industry in which Valve responded to competition by reducing revenue shares in a non-class-wide way for publishers whose games bring the most users to Steam and provide the greatest network effects.

⁶³¹ Schwartz Report, ¶ 309 (“In the but-for world, where there was no PMFN, Steam would have likely faced a more expansive competitive threat and likely much earlier than Epic’s entrance. Steam would have faced multiple credible competitors, who would have sought to attract the largest games to their platforms to attract users and build network effects, as Steam did. Once those competitors had succeeded in building network effects, they would then become more attractive options for publishers of smaller games and those smaller games would in turn be more attractive to competitors. In such a competitive context, Steam would likely face pressures to both (1) further lower its commission rate for the largest games that entered Steam’s tiered commission structure and (2) lower its commission rates for smaller games that did not enter Steam’s tiered commission structure.”).

⁶³² This assumption is also at odds with revenue share structures prevalent among other platforms that Valve might adopt in Dr. Schwartz’s but-for world. For example, Apple’s App Store offers a lower revenue share for small businesses earning less than \$1 million per year, but charges a higher standard revenue share to larger businesses. See Apple Newsroom, “Apple announces App Store Small Business Program,” November 18, 2020, available at <https://www.apple.com/newsroom/2020/11/apple-announces-app-store-small-business-program/>, accessed on May 6, 2024. [REDACTED]

⁶³³ Schwartz Report, ¶ 309 (“In the but-for world, where there was no PMFN, Steam would have likely faced a more expansive competitive threat and likely much earlier than Epic’s entrance. Steam would have faced multiple credible competitors, who would have sought to attract the largest games to their platforms to attract users and build network effects, as Steam did. Once those competitors had succeeded in building network effects, they would then become more attractive options for publishers of smaller games and those smaller games would in turn be more attractive to competitors. In such a competitive context, Steam would likely face pressures to both (1) further lower its commission rate for the largest games that entered Steam’s tiered commission structure and (2) lower its commission rates for smaller games that did not enter Steam’s tiered commission structure.”).

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9. CONCLUSION: ECONOMIC THEORY AND EVIDENCE ARE INCONSISTENT WITH ALLEGATIONS OF COMMON ANTITRUST INJURY TO THE PROPOSED CLASS

368. Plaintiffs’ core economic theory is that the alleged PMFN led to supracompetitive revenue shares for all publishers, and therefore all publishers were impacted by the alleged conduct on a class-wide basis.⁶³⁴ To demonstrate that such a theory of harm applies on a class-wide basis, Dr. Schwartz must be able to demonstrate three distinct points with common economic evidence:
- a. Dr. Schwartz must demonstrate that the alleged anticompetitive conduct took place, and took place on a class-wide basis.
 - b. Dr. Schwartz must demonstrate that revenue shares on Steam are supracompetitive, and supracompetitive on a class-wide basis.
 - c. Dr. Schwartz must demonstrate causation between the premise (the alleged PMFN) and the conclusion (the alleged supracompetitive revenue shares) on a class-wide basis.
369. Dr. Schwartz fails to demonstrate all three points. Furthermore, given the evidence I have discussed, Dr. Schwartz *cannot* demonstrate these three points.
370. **First, there is no evidence of the alleged class-wide PMFN.** In order to analyze whether the alleged PMFN exists and affected the pricing decisions made by the 32,469 publishers in the proposed class, Dr. Schwartz would need to conduct a systematic data analysis to see if, in fact, publishers sell games at the same prices on other stores as on Steam. He did not do so. Rather than conduct such an analysis, Dr. Schwartz instead relies on a request form for Steam keys that he claims ■ percent of proposed class members saw,⁶³⁵ with no class-wide evidence they understood it to affect (and that it did affect) their pricing decisions outside of Steam keys, and an ad-hoc review of 40 emails between Valve and a smaller number of publishers about pricing. Furthermore, publishers have testified they were not aware of the alleged PMFN. When I analyze pricing data across platforms, I find that the evidence is inconsistent with the alleged PMFN. See Section 7.
371. **Second, Dr. Schwartz does not, and cannot, reliably estimate class members’ revenue shares.** Dr. Schwartz disregards the effect that Steam keys have on revenue shares. His revenue share calculations are thus overstated; Dr. Schwartz includes only the revenues publishers receive from selling games on Steam but excludes the revenues they receive from selling Steam keys. Because publishers do not use Steam keys in a common way (some use more, some less, some none), and do not report to Valve the revenue they receive from selling Steam keys, revenue shares must be

⁶³⁴ Letter from Nicolas Siebert (Quinn Emanuel) to Nathan Buchter (Fox Rothschild), “RE: In re Valve Antitrust Litigation, Case No. 2:21-cv-00563-JCC (W.D. Wash.),” September 13, 2023, p. 2 (“Plaintiffs’ core economic theory is that Valve’s platform most-favored nations provision meant that publishers were not permitted to price their games on competing platforms for less than they did on Steam (regardless of the competing platforms’ commission), thereby eliminating any incentive for competing platforms to lower their commission, allowing Valve to maintain a supracompetitive commission itself (and resulting in higher pricing to consumers).”).

⁶³⁵ Schwartz Report, Footnote 441 (“Of the publishers in Valve’s transaction data, ■ are associated with at least one Steam Key activation.”).

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determined publisher by publisher. In order to conduct the necessary calculations, individualized inquiry is required. See Section 4.

372. **Finally, Dr. Schwartz does not, and cannot, demonstrate causation between the alleged conduct and the alleged harm.** Dr. Schwartz does not and cannot demonstrate that his premise is true (i.e., that the alleged PMFN exists and constrains prices on a class-wide basis). Furthermore, he does not and cannot demonstrate that his conclusion is true (i.e., that Valve’s revenue shares are supracompetitive, and supracompetitive on a class-wide basis). In consequence, Dr. Schwartz *cannot* assert causation between the alleged conduct and the alleged harm.
373. Even if Dr. Schwartz were to demonstrate, contrary to the evidence, that there was an alleged PMFN and that Valve’s revenue shares were supracompetitive, in order to demonstrate common harm, he would still need to reconcile his findings with several aspects of the industry. For example, both economic theory and industry analysis demonstrate that many publishers would not price differently in the presence of a PMFN (Section 7). Other factors, like the value that publishers place on Steam features, can explain differences in nominal revenue shares across platforms (Section 5). Given this, and given the fact that revenue shares vary across platforms, Dr. Schwartz would also need to consider the rates at which publishers use alternative platforms in the actual and but-for world in assessing whether publishers would be better off in that but-for world (Section 6). I have reviewed the “empirical” approach put forward by Dr. Schwartz, and I find that Dr. Schwartz fails to consider the factors that would be necessary to demonstrate causation between the alleged conduct and the alleged harm (Section 8).⁶³⁶
374. The fact that Dr. Schwartz cannot demonstrate any of the principles underlying Plaintiffs’ core theory of harm is unsurprising given that he also fails to demonstrate that Valve has the market power necessary to lead to such alleged harm. Dr. Schwartz’s proposed market fails to consider the competition Steam faces from a variety of sources (Section 3).
375. Plaintiffs and their experts’ methodologies do not and cannot establish class-wide antitrust impact on proposed class members using common proof.

Executed on the 17th day of May, 2024



Lesley Chiou

⁶³⁶ Dr. Schwartz put forward three “economic approaches” in his efforts to demonstrate common harm. I have reviewed his “empirical” approach in connection with my assignment; I understand that Professor Ashley Langer will be opining on Dr. Schwartz’s “Platform Competition Model” and “yardstick” approaches.

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10. APPENDIX: SUMMARY OF VARIATION IN PUBLISHER CHARACTERISTICS

376. In this appendix, I discuss in detail the wide differences among publishers, as mentioned in Section 2.4. As discussed throughout my report, these differences affect the value publishers receive from Steam and their incentives to respond to changes in platform fees.
377. **First, publishers vary in their size**, both in the number of games they release and their total revenue. Games that sell many units likely face widely different demand conditions than those that sell relatively few units. The total number of units sold is an important factor that characterizes a game’s supply and demand conditions, which are crucial to assess important concepts in this case such as how publishers price games.⁶³⁷ Publishers who sell multiple games must also consider the supply and demand conditions of each game that they sell, adding a further level of complexity. Column 2 of Exhibit 22 shows that the majority of publishers who sell games through Steam have only one game on Steam. Other publishers have many more games; the [REDACTED] percent of publishers by game count have at least [REDACTED] games on Steam, and the [REDACTED] percent of publishers by game count have at least [REDACTED] games on Steam. The publisher with the most games, [REDACTED] has [REDACTED] games on Steam.

Exhibit 22

Publishers vary in size

	Percentile	Number of games on Steam in 2022	Total 2022 revenue
1.	1st	[REDACTED]	[REDACTED]
2.	50th	[REDACTED]	[REDACTED]
3.	99th	[REDACTED]	[REDACTED]
4.	99.9th	[REDACTED]	[REDACTED]
5.	Max	[REDACTED]	[REDACTED]
	Average	[REDACTED]	[REDACTED]

Source: Schwartz Report, backup materials

Note: All metrics are reported independently of each other (e.g., the publisher with the maximum number of games on Steam in 2022 is not necessarily the same as the publisher with the maximum total 2022 revenue). This table displays the distribution of publishers with at least one transaction in the Steam revenue data in 2022. Valve is excluded. The number of games for each publisher is calculated as the number of unique [REDACTED] in the Steam revenue data associated with the publisher during the year 2022. Revenue is calculated as the net sales for a publisher during the year 2022.

378. Publishers also vary in the revenue they earn through Steam. Column 3 of Exhibit 22 shows that most publishers who sell games through Steam earned [REDACTED] in revenue in 2022. In contrast, the [REDACTED] percent of publishers by revenue made, at minimum, [REDACTED] in revenue in 2022. The [REDACTED] percent of publishers by revenue made [REDACTED] in revenue each in 2022. [REDACTED] publisher, made [REDACTED] in revenue in 2022.⁶³⁸

⁶³⁷ Video games are differentiated products, and producers of differentiated products choose prices according to both cost structure and consumer demand. See Section 2.1.4.

⁶³⁸ The [REDACTED] percent and [REDACTED] percent of publishers by revenue in 2022 (excluding Valve) were responsible for [REDACTED] and [REDACTED] percent of all revenue on Steam in 2022. [REDACTED] accounted for [REDACTED] percent of all revenue on Steam in 2022. See Workpaper 51.

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379. Second, **publishers vary in the types of games they release**. For example, publishers vary in the extent to which they release games with **multiplayer functionality**. The share of total revenue from multiplayer games varies widely across publishers who sell games on Steam. In 2022, 74 percent of publishers on Steam did not make *any* of their revenue on multiplayer games, while 18 percent of publishers on Steam made *all* of their revenue on multiplayer games. The remaining 8 percent of publishers received revenue from both multiplayer and non-multiplayer games.⁶³⁹ Among the 8 percent of publishers with both single-player and multiplayer games, multiplayer games accounted for an average of 42 percent of titles released by that publisher and ■ percent of that publisher’s net sales on Steam.⁶⁴⁰
380. Publishers also distribute games with **different genres**, which appeal to distinct audiences. Professor Rietveld acknowledges this difference in user preferences.⁶⁴¹ Valve records information on the primary genre of games on Steam as indicated by the publisher. This data shows that, among games published since October 2018, the vast majority of publishers (85 percent) focus on a single genre. This is driven in part by the fact that many publishers only released a single game during the period. In addition, of the almost 5,000 publishers who released multiple games during this period, nearly a third focus on a single genre.⁶⁴² At the same time, the data also indicates that some publishers release games across multiple genres. For example, Microsoft Game Studios publishes both the *Forza* racing games and the action games in the *Halo* series, among other games with genres including “action,” “adventure,” “casual,” “indie,” “racing,” “RPG,” “simulation,” and “strategy.”⁶⁴³
381. Games with different characteristics, such as multiplayer functionality and genre, appeal to distinct subsets of Steam users and therefore compete more closely with distinct subsets of other titles on Steam. Each audience may benefit differentially from Steam features that enhance certain forms of gameplay, as explained in Section 5.2. For example, many indie games are story-focused games that most Steam users will only play once, and likely benefit more from user reviews that can help give exposure to smaller titles. Other genres have more long-term engagement through online multiplayer play, and benefit more from voice chat and other social features. The differences in genres offered by a publisher will create differences in the extent to which different publishers benefit from certain Steam features.⁶⁴⁴ For example, as discussed in Section 5.2.1, certain genres are more well-suited to controller use and likely benefit

⁶³⁹ Workpaper 29.

⁶⁴⁰ Workpaper 52.

⁶⁴¹ Rietveld Report, ¶ 178 (“PC game players are heterogenous with tastes and preferences likely defined by things like genres, the extent of social play, and the look and feel of video games.”).

⁶⁴² Workpaper 53. Specifically, 18,573 of the 21,848 publishers who released a game on Steam since October 2018 released games of a single genre. 78 percent of publishers who released a game on Steam since October 2018 only released a single game. Of the 4,840 publishers that have released multiple games since October 2018, 1,565 (32%) focus on a single genre. This analysis only includes publishers who released games with a known descriptive primary genre. Identifying a game’s genre requires information on ■■■■■. I rely on Dr. Schwartz’s methodology to ■■■■■. See Appendix Section 17.1 for details on this data.

⁶⁴³ Workpaper 54.

⁶⁴⁴ Note that looking at genre alone may in fact understate variability across titles. Games within the same genre can differ along other important dimensions. See Section 2.1.2 above.

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more from controller support features on Steam.⁶⁴⁵ Below, I describe the variability in controller use and implications for the degree of substitution between Steam and other platforms across publishers.

382. **Third, publishers vary in the pricing strategies they adopt for their games.** As discussed in Section 2.1.3, some publishers choose to monetize their products using microtransactions while others do not. As a share of total revenue, most publishers either rely entirely on microtransactions or do not rely on them at all. In 2022, ■ percent of publishers on Steam did not make any of their revenue on microtransactions while ■ percent of publishers on Steam made *all* of their revenue on microtransactions. The remaining ■ percent of publishers received revenue from both microtransactions and package sales.⁶⁴⁶ While only ■ percent of publishers used microtransactions, these publishers were responsible for ■ percent of all 2022 revenue.⁶⁴⁷
383. Consistent with differences in monetization strategies, the distribution of revenue over time varies across games, so different publishers experience different revenue cycles. Some games earn a large share of their lifetime revenue soon after release while other games exhibit a “slower burn” with more consistent revenues over time. To illustrate this point, I calculate the ratio of (a) the revenue in the second year after a game’s release to (b) the revenue in the first year after release. I then average these ratios across games at the publisher level. Exhibit 23 reports the distribution of ratios by publisher.
384. In Exhibit 23, a ratio close to 1 indicates that on average, a publisher’s games garner similar revenue during the second year after launch as during the first year. Values less than 1 indicate that a publisher earns more revenue during the year after a game’s release than later on. Values greater than 1 indicate that, on average, a publisher’s games generate more revenue in year two than during the first year after launch.
385. I find that most publishers earn a large fraction of revenue around their games’ release, with ■ percent of publishers in Exhibit 23 having a ratio of ■ or less. Some publishers have more consistent sales over time; ■ percent of publishers have ratios between ■

⁶⁴⁵ Nam Bui, “The Risk of Online Multiplayer games in Indie development,” *Game Developer*, September 1, 2016, available at <https://www.gamedeveloper.com/business/the-risk-of-online-multiplayer-games-in-indie-development>, accessed on April 20, 2024 (“When talking about indie games, most people will relate the term to games that contain a lengthy campaign, complex puzzles/mechanisms, deep and meaningful story, or just plain simple gameplay for fun. In fact, majority of indie games that developed in recent years are focused on single-player or local multiplayer experiences with those features. On the other hand, online multiplayer are rarely mentioned in the landscape of indies as there are only a few developers making a game of Player-vs-Player experiences.”); Dan Marshall, “Harnessing the power of positive reviews,” *GamesIndustry.Biz*, August 24, 2020, available at <https://www.gamesindustry.biz/harnessing-the-power-of-positive-reviews>, accessed on April 20, 2024 (“I’m a longtime indie. I’ve been doing this since about 2006, and positive Steam reviews has never been more important to developers like you and I.”); Joe Hanson, “Level Up Engagement and Put the ‘Social’ in Multiplayer Games,” *Game Developer*, May 7, 2018, available at <https://www.gamedeveloper.com/programming/level-up-engagement-and-put-the-social-in-multiplayer-games>, accessed on May 9, 2024 (“Interactive, immersive social features are a key component of any successful multiplayer game.”); Mark Sammut, “PC Games That Play Better With A Controller,” *GameRant*, March 26, 2024, available at <https://gamerant.com/pc-games-better-with-controller>, accessed on April 20, 2024 (“Similar to keyboard and mouse, a few genres are associated with controllers, especially if their main franchises started on consoles and eventually made their way to computers.”).

⁶⁴⁶ Workpaper 46.

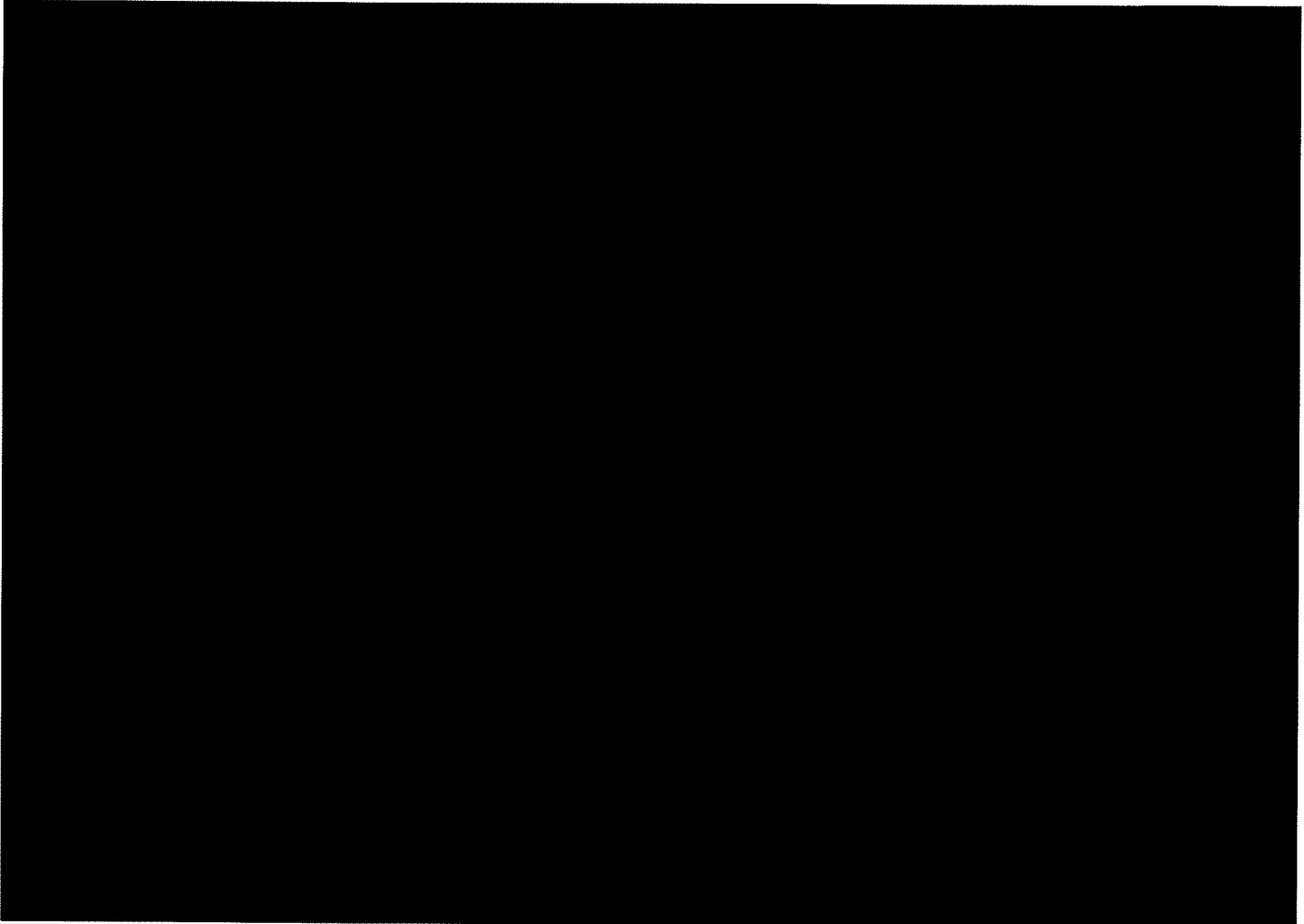
⁶⁴⁷ Workpaper 55.

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and [REDACTED]. Others have revenue that grows after the first year; about [REDACTED] percent of publishers have ratios above [REDACTED].⁶⁴⁸

Exhibit 23

Many publishers have revenue concentrated around the time of release, while others earn revenue more consistently over time



Source: Schwartz Report, backup materials

Note: Games with less than \$1,000 in net revenue have been filtered out. There are 22 publishers with negative ratios due to returns that are not presented in this chart. The games for a given publisher in this analysis are limited to those with a release date (as defined by the earliest entry in the Steam Revenue Data) after October 1, 2018 and that have been released for at least two years. Defining release date by earliest entry in the Steam Revenue Data includes time periods before release for some games that have a pre-sale period. Pre-purchase periods are uncommon because Steam does not support running pre-purchase periods except in rare instances with well-established partners. See Steamworks, "Pre-Purchasing on Steam," available at <https://partner.steamgames.com/doc/store/preparepurchase>, accessed on May 8, 2024.

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386. These different types of revenue cycles may reflect different business strategies by publishers—for example, one strategy is to pursue a “games as a service” model that involves more regular updates over time and therefore a more consistent revenue stream.⁶⁴⁹ The different revenue cycles also affect publishers’ economic relationship

⁶⁴⁸ Workpaper 56.

⁶⁴⁹ Jason Schreier, “Top Video Game Companies Won’t Stop Talking About ‘Games As A Service,’” *Kotaku*, May 30, 2017, available at <https://kotaku.com/top-video-game-companies-wont-stop-talking-about-games-1795663927>, accessed on April 20,

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with Steam; publishers who earn most of their revenue at the time of release primarily interact with Steam when they release new games—but publishers whose games have longer life cycles interact with Steam more consistently for a longer period of time. Publishers’ optimal pricing strategy (and benefits from Steam features discussed in Section 5.2.2 that enable this pricing strategy) as well as the value of Steam features and engagement (including the types of consumer facing features discussed in Section 5.2.1) may vary based on a given title’s life cycle as well.

387. **Fourth, publishers vary in their relationship with the developers of games.** Plaintiffs’ proposed class includes entities who paid Valve’s revenue share directly, as well as those who paid Valve’s revenue share “through an agent.”⁶⁵⁰ Consequently, Valve’s proposed class includes publishers, developers who sell games on Steam directly (e.g., some developers use Steam Direct to self-publish), and developers who sell games on Steam through an agreement with a publisher. The diversity of the proposed class and the contractual relationships between developers and publishers can have implications for the assessment of common antitrust impact.⁶⁵¹ Valve data does not contain information on the relationship between developers and publishers, and comprehensive information relating to the financial agreements between developers and publishers has not been produced in connection with this matter.

388. **In addition, publishers vary in their audiences.** First, publishers’ audiences vary in size. Exhibit 24 shows this variation across three metrics: (a) average total players per game, (b) average GPU benchmark speed, and (c) percentage of users with a controller. In 2022, the majority of publishers averaged [REDACTED] players per game over a game’s lifetime, while the top 1 percent of publishers averaged [REDACTED] players per game over a game’s lifetime. The top 0.1 percent of publishers averaged [REDACTED] players per game over a game’s lifetime, and the top publisher, [REDACTED], had the highest average players per game, as its lone game [REDACTED] had almost [REDACTED] players over its lifetime.

389. Similarly, the publishers’ audiences vary in the extent to which they use a controller when playing PC games. Exhibit 24 shows the percentage of users playing PC games with a controller varied substantially by publisher from 0 percent to 100 percent. Users who play with a controller may be attracted to Steam for different reasons than users who do not play with a controller. Publishers who are aware of their audiences’ preferences will value the features associated with the Steam platform differently. Consequently, publishers will vary in the extent to which alternative platforms are attractive substitutes to Steam; that variation indicates that publishers will not be uniformly harmed by the alleged conduct, as discussed in Section 6.

2024 (“Today’s big video games aren’t products—they’re services. That’s not a new buzzword—‘games as service’ has been floating around for many years now—but these days, we’re seeing big publishers embrace it in a way they haven’t before. Developers are looking at ways to make money off games for as long as possible, through downloadable content, cosmetic microtransactions, and good-old fashioned loot boxes.”).

⁶⁵⁰ Complaint, ¶ 375 (“All persons or entities who, directly or through an agent, paid a commission to Valve in connection with the sale or use of a game on the Steam platform on or after January 28, 2017.”).

⁶⁵¹ For example, publishers may be able to limit antitrust injury by passing through any alleged overcharges onto developers. I understand that Professor Ashley Langer analyzes the role of pass-through for the assessment of impact and damages in this matter in her report.

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Exhibit 24***Publishers vary in their audience base***

	Percentile	Average total players per game	Average GPU benchmark speed	Percent of users with a controller
1.	1st		64	0%
2.	50th		97	1%
3.	99th		130	70%
4.	99.9th		139	100%
5.	Max		152	100%
	Average		97	9%

Source: Schwartz Report, backup materials; Steam Hardware Survey and Ownership Data; Steam Lifetime Playtime Data; Steam Controller Use Data; UserBenchmark

Note: All metrics are reported independently of each other (e.g., the publisher with the maximum average user GPU benchmark speed is not necessarily the same as the publisher with the maximum count of average total players per game or the publisher with the maximum percentage of users with a controller). This table displays the distribution of publishers with at least one sale or return in the Steam revenue data in 2022. Valve is excluded. Total players per game is calculated by summing the player count from each percentile in the Steam lifetime playtime data. The average total players per game for a publisher is calculated by taking the simple average of the total players for each of the games associated with the publisher in the Steam revenue data in 2022. For each publisher, average GPU benchmark speed is calculated as the mean measurement among all the machine IDs associated with an app ID in the Steam ownership data, which is associated with the publisher in the Steam revenue data in 2022. Machine IDs are counted only once, even if they are associated with the publisher through multiple app IDs. 77 percent of machine IDs are successfully linked to a benchmark speed. Percentage of users with a controller is calculated as the player-weighted average controller to player ratio for each publisher ID in the Steam controller use data.

390. Additionally, publishers’ audiences vary in the performance capabilities of the PCs on which they play games. Using hardware data from Steam from 2022, I match the hardware associated with users of a given publisher to an index of industry benchmarks that describe hardware performance.⁶⁵² Exhibit 24 shows the average GPU benchmark speed in 2022, which affects the graphical and technical performance of a user’s video game experience, varied substantially from an average index value of at most 64 for the bottom 1 percent of publishers to an average index value of at least 130 for the top 1 percent of publishers.⁶⁵³ As Professor Rietveld acknowledges, there is a “great degree of variation among PC gaming hardware.”⁶⁵⁴
391. Differences in the performance capabilities of PCs used by audiences of different games are driven in part by differences in the computational demands of different games and different publishers. For example, [REDACTED] is a popular title on Steam, but it does not require cutting-edge performance in hardware because it was released 10 years ago. The average user of this game in 2022 had a GPU with a benchmark index of 83.

⁶⁵² Appendix Section 17.3.2.

⁶⁵³ UserBenchmark, “What is the effective GPU speed index,” available at <https://gpu.userbenchmark.com/Faq/What-is-the-effective-GPU-speed-index/82>, accessed on April 20, 2024 (“Effective Speed (average bench) is calibrated to estimate differences in EFps between PCs. We publish EFps data, with source video footage, for hundreds of PC configurations using replicable gameplay in the world’s most popular games. We use testable, verifiable data to ensure that users can easily compare their own results against ours.”); UserBenchmark, “Test, fix and upgrade your PC’s performance,” available at <https://www.userbenchmark.com/page/guide>, accessed on April 20, 2024 (“As emphasized in the high level summary, the graphics for this PC are weak, scoring an underwhelming 9.81% which is a bit on the low side but still reasonably consistent with the average score for the HD 7750 (11%). Playing 3D games would be a struggle, if not an impossibility with this card and it may even be an effort to play some HD movies. This PC’s graphics score, and therefore gaming experience, could be improved by upgrading to a better GPU.”).

⁶⁵⁴ Rietveld Report, ¶ 81 (“Certain aspects of the game development process are also unique to PC games. For example, given the great degree of variation among PC gaming hardware, game developers must ensure that their games can operate across a larger range of specifications to accommodate the numerous different PC builds that their game will be played on.”).

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Similarly, social indie games that may attract a more casual audience, don't require high-performance GPUs. For example, [REDACTED] by [REDACTED] had an average user benchmark index of 85 in 2022. By contrast, recently released complex RPGs with detailed graphics, such as [REDACTED] published by [REDACTED] in 2022, attract an audience with higher performing PCs. The average user of this game in 2022 had a GPU with a benchmark index of 105.⁶⁵⁵ While the PC performance of users playing a specific title can vary, each game and publisher will have different shares of users who seek very high performance or accept retro/lower-end performance for their PC.

⁶⁵⁵ Workpaper 57.

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11. APPENDIX: COMPETITOR REVENUE SHARE COMPARISON

392. Exhibit 25 summarizes the nominal revenue share rates of Steam and competitor third-party platforms discussed by Dr. Schwartz, as well as competitor Steam key resellers and console platforms that I consider in my report.⁶⁵⁶ I compare the minimum achievable revenue share rates paid by publishers on those platforms with publishers' average nominal revenue share rate on Steam following the introduction of Valve's tiered revenue share rates.

Exhibit 25***Valve offers competitive terms on Steam relative to its competitors***

	Platform	Platform category	Nominal rate	Additional information
1.	Good Old Games (GOG)	PC software	30%	Uses 30% as a benchmark to negotiate individual agreements.
2.	Green Man Gaming	PC storefront	30%	—
3.	Microsoft Store	Console software	30% [1]	—
4.	Nintendo eShop	Console software	30% [2]	Operated at 35% for WiiWare before switching to 30%.
5.	PlayStation Store	Console software	30% [3]	—
6.	Twitch	PC software	30% [4]	Twitch ceased selling games in November 2018. 1) 30% for sales under \$10 million. 2) 25% for sales between \$10 and \$50 million. 3) 20% for sales above \$50 million. Operated at 30% for all games before switching to tiered structure in November 2018.
7.	Steam	PC software	████ [5]	15% to Humble; 10% can be donated to charity or be returned to buyer as store credit.
8.	Humble Store	PC storefront	25%	Sales of bundles subject to a minimum share to Humble Bundle of "generally 15–30%."
9.	Humble Bundle	PC storefront	15%	0% for first six months if launched exclusively on Epic Games Store.
10.	Epic Games Store	PC software	12%	Operated at 30% before switching to 12% in August 2021.
11.	Microsoft Store	PC software	12%	Operated at 30% before switching to 10% in 2019. In March 2019, the Discord storefront was discontinued and all sales shifted to publisher- or game-specific servers. Game sales ceased entirely in March 2022.
12.	Discord	PC software	10%	Default rate of 10% that can be adjusted to as low as 0%.
13.	itch.io	PC software	0%	

Source: Appendix Section 11.1

Note: Nominal rate refers to the minimum listed rate a publisher must pay for sales on the platform. Platform revenue share information is provided by official disclosures unless otherwise indicated.

[1] The Microsoft Store's revenue share for console games is confirmed by Microsoft spokespersons in statements to *The Verge*.

⁶⁵⁶ This analysis excludes EA's Origin and EA App platforms as well as Ubisoft Connect as revenue share information is not readily available from public sources.

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[2] The Nintendo eShop’s current and previous revenue share rates are provided by a source for *IGN* and not publicly disclosed.

[3] The PlayStation Store’s revenue share is reported by *The Verge* and alleged in a claim against Sony filed with the U.K. Competition Appeal Tribunal. It is not publicly disclosed.

[4] In instances where users purchase a game by referral from a qualified Twitch streamer, Twitch would receive only 25 percent of sales, with the remaining 5 percent going to the referring streamer.

[5] This is Valve’s average nominal revenue share following the introduction of tiered revenue shares, as calculated by Dr. Schwartz.

393. Industry reports as well as expert testimony in recent litigation establish that a revenue share rate of 30 percent is the standard in the digital gaming industry and for platforms in general. Many platforms and storefronts on PC and console devices follow this standard. The GOG PC platform uses the 30 percent standard as a starting point for individual negotiations with publishers, while Green Man Gaming, a Steam key reseller, offers a standard 30 percent nominal revenue share.⁶⁵⁷ Console platforms from Sony, Microsoft, and Nintendo similarly follow this 30 percent standard on their PlayStation, Microsoft, and eShop stores.⁶⁵⁸
394. Platforms that offer lower revenue share rates are either unprofitable or set prices under very different conditions than Valve. Among PC platforms and Steam key resellers, those with a nominal revenue share rate different from 30 percent are not directly comparable to Valve’s and Steam. I discuss each in turn.
395. The **Microsoft Store** has historically followed the 30 percent industry standard, lowering its rate to 12 percent only starting in August 2021.⁶⁵⁹ Unlike Valve, Microsoft also operates the **Microsoft Store for Xbox** devices, on which it continues to offer the industry standard 30 percent.⁶⁶⁰ Industry sources have noted that Microsoft Store revenues on console “account for the bulk of Xbox’s business,” and that “Xbox is on a mission to unify its PC and console ecosystems,” likely affecting Microsoft’s PC platform revenue share decision.⁶⁶¹
396. **Itch.io** and **EGS** offer lower revenue share rates than Valve does on Steam, but their rates are not directly comparable to Steam’s, either. Unlike Steam, itch.io’s value proposition is, in its own language, to stay “smaller” and “weirder,” so it caters to small,

⁶⁵⁷ Darrell Etherington, “GOG.com Opens a New Indie Developer Portal As It Looks To Broaden Its DRM-Free Games Catalogue,” *TechCrunch*, August 19, 2013, available at <https://techcrunch.com/2013/08/19/gog-com-opens-a-new-indie-developer-portal-as-it-looks-to-broaden-its-drm-free-games-catalogue/>, accessed on May 3, 2024 (“the usual 70/30 split that GOG offers developers”); Karl, “Want to sell or publish your game with Green Man Gaming?” *Green Man Gaming*, June 2, 2015, available at <https://greenmangaming.zendesk.com/hc/en-us/articles/215465328-Want-to-sell-or-publish-your-game-with-Green-Man-Gaming>, accessed on April 20, 2024 (“We work on a 70/30 revenue share based on the SRP provided that is calculated after any applicable reductions.”).

⁶⁵⁸ Serkan Toto, “Price Breakdown of a \$70 Video Game: Digital vs Physical,” *Kantan Games*, December 30, 2020, available at <https://www.serkantoto.com/2020/12/30/price-video-console-game-digital-physical>, accessed on April 20, 2024 (“the standard rate that Nintendo, Microsoft and Sony charge publishers for distributing games on their digital stores is generally fixed at 30%.”).

⁶⁵⁹ Tom Warren, “Microsoft shakes up PC gaming by reducing Windows store cut to just 12 percent,” *The Verge*, April 29, 2021, available at <https://www.theverge.com/2021/4/29/22409285/microsoft-store-cut-windows-pc-games-12-percent>, accessed on April 20, 2024 (“The software giant is reducing its cut from 30 percent to just 12 percent from August 1st, in a clear bid to compete with Steam and entice developers and studios to bring more PC games to its Microsoft Store.”).

⁶⁶⁰ Tom Warren, “Microsoft explored reducing its Xbox store cut to shake up console gaming,” *The Verge*, May 2, 2021, available at <https://www.theverge.com/2021/5/2/22415712/microsoft-xbox-store-cut-epic-games-court-documents>, accessed on May 3, 2024 (“Microsoft, Sony, and Nintendo all currently take 30 percent on digital game sales.”).

⁶⁶¹ Jessica Conditt, “Microsoft follows Epic and cuts Xbox PC revenue share to 12 percent,” *Engadget*, April 29, 2021, available at <https://www.engadget.com/xbox-pc-rev-share-88-12-epic-apple-130036485.html>, accessed on April 20, 2024 (“While Microsoft has historically used a 70/30 split, the company is switching to Epic’s new standard of 88/12 for PC releases ... [Microsoft] didn’t share any information about changes to revenue sharing on the console side, which accounts for the bulk of Xbox’s business ... Broadly speaking, Xbox is on a mission to unify its PC and console ecosystems.”).

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independent developers and allows them to decide what share of the revenue they keep, offering a 10 percent share by default and allowing publishers to adjust that share.⁶⁶² EGS, which offers a 12 percent revenue share rate, is a large-scale platform similar to Steam, but it currently operates at a loss as it “focuses on growth as opposed to profitability,” as Dr. Schwartz states.⁶⁶³ Consequently, its revenue share rates are not a sustainable benchmark in a competitive equilibrium.

397. **Discord** initially offered a 30 percent revenue share after it began selling games in October 2018. Starting in 2019, Discord lowered this rate to 10 percent.⁶⁶⁴ However, Discord already operated a successful text and voice chat service prior to selling games, likely affecting its business decisions related to revenue share.⁶⁶⁵ Additionally, following the introduction of Discord’s lowered 10 percent revenue share rate, Discord retired its storefront in favor of publishers selling games through individual, publisher- or game-specific stores located on their own Discord servers.⁶⁶⁶ This sales model bears a closer resemblance to self-distribution of a publisher’s titles than it does to PC platform storefronts such as the Steam Store. Therefore, Discord’s revenue share rate is not a reliable benchmark for rates in a competitive equilibrium.
398. Additionally, these PC platforms generally offer fewer and lower-quality features than Steam, as discussed in Section 5.1. This suggests that disparities between Steam’s revenue share rate and the rates of platforms such as the Microsoft Store, itch.io, EGS, and Discord are likely much smaller when adjusted for platform quality.
399. Among key reseller storefronts, **Humble** offers a variable 15 to 30 percent revenue share on games sold through Humble Bundle and a 25 percent revenue share on games

⁶⁶² Patricia Hernandez, “The game store that outshines Steam by staying small and weird,” *The Verge*, November 29, 2018, available at <https://www.theverge.com/2018/11/29/18118217/itchio-steam-leaf-corcoran-pc-games-indie>, accessed on April 20, 2024 (“We’re always going to host weirder, smaller things that probably will never feel appropriate on Steam”); Leaf, “Introducing open revenue sharing,” *Itch.io*, March 4, 2015, available at <https://itch.io/updates/introducing-open-revenue-sharing>, accessed on April 20, 2024 (“As the seller you decide what percentage itch.io gets from each transaction. From 0 to 100%, set the slider to what you think is fair ... itch.io’s default rate will be 10%. If you don’t make any changes to your account, then it will automatically be set to 10%.”).

⁶⁶³ Opinion, *Epic Games, Inc. v. Apple, Inc.*, U.S. Court of Appeals for the Ninth Circuit, April 24, 2023, p. 13 (“As a distributor, Epic makes a game available for download on the Epic Games Store and covers the direct costs of distribution; in exchange, Epic receives a 12% commission—a below-cost commission that sacrifices short-term profitability to build market share.”); Wesley Yin-Poole, “The Epic Games Store Still Isn’t Profitable Nearly Five Years After Launch,” *IGN*, November 7, 2023, available at <https://www.ign.com/articles/the-epic-games-store-still-isnt-profitable-nearly-five-years-after-launch>, accessed on April 20, 2024 (“Epic’s expensive war with Valve of PC gamers’ cash still hasn’t paid off ... *the Epic Games Store is yet to turn a profit for Epic, and remains a loss leader as it approaches its fifth birthday in December*,” emphasis added); Schwartz Report, ¶ 310.

⁶⁶⁴ Andrew Webster, “Discord’s game store tries to top Steam and Epic by offering developers more money,” *The Verge*, December 14, 2018, available at <https://www.theverge.com/2018/12/14/18139843/discord-pc-games-store-revenue-split>, accessed on April 20, 2024 (“Today, the company announced that it will offer developers a 90 percent share of revenue when its PC game store opens up to all creators starting next year ... Currently, it operates under a fairly standard 70/30 revenue split.”).

⁶⁶⁵ Nick Statt, “Discord’s game store launches globally today with indie gems like Hollow Knight and Dead Cells,” *The Verge*, October 16, 2018, available at <https://www.theverge.com/2018/10/16/17980810/discord-digital-game-distribution-store-steam-competitor-nitro-subscription-service>, accessed on April 27, 2024 (“Discord, a PC gaming-centric application that combines voice and text chat with a robust platform for third-party integrations, has been one of the fastest-growing gaming-centric companies of the last decade. It launched just three years ago, and it now counts 150 million registered users, many of whom use the app for chat and as a way to see what their friends are playing at any given moment.”).

⁶⁶⁶ Nelly, “Empowering Developers with Community and Commerce,” *Medium*, March 14, 2019, available at <https://medium.com/discord-engineering/empowering-developers-with-community-and-commerce-68d9c0712662>, accessed on May 6, 2024 (“For a small development fee, devs will have access to store and news channels in their server. When ready, devs can apply for Verification and gain access to vanity features, Server Discovery, and that sweet, sweet Verified check mark.”).

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sold through the Humble Store.⁶⁶⁷ I note that Humble does not offer services for users to consume the products it sells, unlike Steam's business model of continuing to connect a given consumer and publisher through the platform even after the point of sale.⁶⁶⁸ Additionally, Humble's business relies on selling Steam keys and keys from other platforms, for which those platforms bear the costs of distribution and continuing to connect consumers and publishers.⁶⁶⁹ Therefore, Humble's rates are not a reliable benchmark for revenue share rates in a competitive equilibrium.

11.1. Backup materials for competitor revenue shares

400. This section lists the materials I relied on for Exhibit 25.

1. Andrew Webster, "Discord's game store tries to top Steam and Epic by offering developers more money," *The Verge*, December 14, 2018, available at <https://www.theverge.com/2018/12/14/18139843/discord-pc-games-store-revenue-split>, accessed on April 20, 2024.
2. Darrell Etherington, "GOG.com Opens a New Indie Developer Portal As It Looks To Broaden Its DRM-Free Games Catalogue," *TechCrunch*, August 19, 2013, available at <https://techcrunch.com/2013/08/19/gog-com-opens-a-new-indie-developer-portal-as-it-looks-to-broaden-its-drm-free-games-catalogue/>, accessed on May 3, 2024.
3. Discord, "Discord Store Distribution Agreement for Developers (Self-Service)," available at <https://discord.com/developers/docs/policies-and-agreements/store-distribution-agreement>, accessed on May 3, 2024.
4. Epic Games, "Epic Games Store Offers App, Software and Game Distribution," available at <https://store.epicgames.com/en-US/distribution>, accessed on May 3, 2024.
5. Humble Support, "Pay What You Want and Contribution Sliders," available at <https://support.humblebundle.com/hc/en-us/articles/204387088-Pay-What-You-Want-and-Contribution-Sliders>, accessed on April 18, 2024.

⁶⁶⁷ Humble keeps 15 percent of Humble Store sales for itself, letting the buyer choose whether the other 10 percent goes to charity or back to them as store credit, and keeps the full 15–30 percent revenue share charged on Humble Bundle sales. Additionally, while Humble does offer game downloads through its Humble App, downloads are restricted to games and users participating in its multi-game subscription service, Humble Choice. See Tom Marks, "Report: Steam's 30% Cut Is Actually the Industry Standard," *IGN*, January 13, 2020, available at <https://www.ign.com/articles/2019/10/07/report-steams-30-cut-is-actually-the-industry-standard>, accessed on May 6, 2024 ("Another exception is the Humble Store ... which takes a 25% cut but only keeps 15% of that for itself, letting the buyer choose whether the other 10% goes to charity or back to them as store credit."); Humble Support, "Pay What You Want and Contribution Sliders," available at <https://support.humblebundle.com/hc/en-us/articles/204387088-Pay-What-You-Want-and-Contribution-Sliders>, accessed on April 18, 2024 ("While splits on each bundle will vary, on average, there will be a minimum amount for Humble Bundle, generally between 15 - 30%.").

⁶⁶⁸ I note, however, that Humble previously offered the Humble app, which served as the access point for the Humble Games Collection, a perk for users who subscribed to Humble Choice that offered access to titles published by Humble Games. The Humble Games Collection was retired on November 7, 2023. See Humble Support, "Humble app/Humble Collections FAQ," available at <https://support.humblebundle.com/hc/en-us/articles/4413091652763-Humble-app-Humble-Collections-FAQ>, accessed on May 13, 2024.

⁶⁶⁹ Humble Bundle, "What Is Humble Bundle?" available at <https://www.humblebundle.com/about/>, accessed on April 17, 2024 ("When you purchase something on Humble Bundle, you'll get a key to redeem on Steam, Ubisoft Connect Desktop App, GOG, or another platform. Many of our books and games are also offered DRM-free.").

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6. Ian Carlos Campbell and Julia Alexander, "A guide to platform fees," *The Verge*, August 24, 2021, available at <https://www.theverge.com/21445923/platform-fees-apps-games-business-marketplace-apple-google>, accessed on May 3, 2024.
7. Jay Peters, "Epic's new program lets developers keep their revenue in exchange for exclusivity," *The Verge*, August 23, 2023, available at <https://www.theverge.com/2023/8/23/23843018/epic-games-store-first-run-developers-revenue>, accessed on May 3, 2024.
8. Jon Bulava, "Game and In-Game Sales Discontinued," *Twitch Developer Forums*, November 13, 2018, available at <https://discuss.dev.twitch.com/t/game-and-in-game-sales-discontinued/18661>, accessed on May 13, 2024.
9. Jonathon Borck et al., "Apple's App Store and Other Digital Marketplaces," *Analysis Group*, July 22, 2020, available at https://www.analysisgroup.com/globalassets/insights/publishing/apples_app_store_and_other_digital_marketplaces_a_comparison_of_commission_rates.pdf, accessed on May 3, 2024.
10. Karl, "Want to sell or publish your game with Green Man Gaming?" *Green Man Gaming*, June 2, 2015, available at <https://greenmangaming.zendesk.com/hc/en-us/articles/215465328-Want-to-sell-or-publish-your-game-with-Green-Man-Gaming>, accessed on April 20, 2024.
11. Leafo, "Introducing open revenue sharing," *Itch.io*, March 4, 2015, available at <https://itch.io/updates/introducing-open-revenue-sharing>, accessed on April 20, 2024.
12. Librarian, "Self-serve Game Selling Depreciation," *Discord*, May 1, 2024, available at <https://support-dev.discord.com/hc/en-us/articles/6309018858647-Self-serve-Game-Selling-Depreciation>, accessed on May 13, 2024.
13. Matt Booty, "Continuing Our PC Gaming Journey in 2021 and Beyond," *Xbox Wire*, April 29, 2021, available at <https://news.xbox.com/en-us/2021/04/29/continuing-our-pc-gaming-journey-in-2021-and-beyond/>, accessed on May 3, 2024.
14. Nelly, "Empowering Developers with Community and Commerce," *Medium*, March 14, 2019, available at <https://medium.com/discord-engineering/empowering-developers-with-community-and-commerce-68d9c0712662>, accessed on May 6, 2024.
15. Ryan Dinsdale, "Sony Being Sued for £5 Billion Over PlayStation Store Prices," *IGN*, August 22, 2022, available at <https://www.ign.com/articles/sony-being-sued-for-5-billion-over-playstation-store-prices>, accessed on May 3, 2024.

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16. Sarah Perez, “Twitch expands game sales to more streamers,” *TechCrunch*, June 7, 2017, available at <https://techcrunch.com/2017/06/07/twitch-expands-game-sales-to-more-streamers/>, accessed on May 3, 2024.
17. Schwartz Report, ¶ 308.
18. Steam, “New Revenue Share Tiers and other updates to the Steam Distribution Agreement,” December 1, 2018, available at <https://steamcommunity.com/groups/steamworks/announcements/detail/1697191267930157838>, accessed on April 18, 2024.
19. Tom Marks, “Report: Steam’s 30% Cut Is Actually the Industry Standard,” *IGN*, January 13, 2020, available at <https://www.ign.com/articles/2019/10/07/report-steams-30-cut-is-actually-the-industry-standard>, accessed on May 6, 2024.
20. Tom Warren, “Microsoft explored reducing its Xbox store cut to shake up console gaming,” *The Verge*, May 2, 2021, available at <https://www.theverge.com/2021/5/2/22415712/microsoft-xbox-store-cut-epic-games-court-documents>, accessed on May 3, 2024.

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12. APPENDIX: METHODOLOGY FOR EFFECTIVE REVENUE SHARE APPROXIMATIONS

401. As discussed in Section 2.2 of my report, Steam keys are digital codes that allow a user to download and launch a game on Steam. Publishers commonly use Steam keys to sell their games on other platforms (e.g., Green Man Gaming or the Humble Store) or their own websites or stores. Valve offers Steam keys to publishers at no cost and does not collect revenue share on sales of Steam keys. Neither Dr. Schwartz nor I can calculate effective revenue shares because data on publishers’ revenue from Steam key sales are not available in this matter as publishers do not report their Steam key sales to Valve. Therefore, publishers’ effective revenue shares can only be approximated using assumptions about the quantities and prices of Steam keys sold. In this appendix, I first discuss the assumptions and approximation methodologies for the quantities and prices of Steam keys sold. Then, I explain in detail my resulting effective revenue share approximations.

12.1. Approximating the quantities of Steam keys sold

402. As explained in Appendix Section 17.2, the data produced by Valve in this matter provide information on the number of Steam keys redeemed (Steam key redemptions data) and the number of Steam keys requested by and issued to publishers (Steam key requests data). Therefore, I consider two assumptions about Steam key sales:

- a. The quantity of Steam keys sold is equal to the number of Steam keys redeemed.
- b. The quantity of Steam keys sold is equal to the number of Steam keys issued.

403. When approximating the quantity of Steam keys sold, I exclude keys that include only hardware items or that were likely intended for purposes other than sale to users (i.e., where the name indicates that the key was unlikely to have been sold). I describe my methodology for these exclusions in Appendix Section 17.2.

404. While I can make these approximations using available data, there are many reasons why these approximations may not reflect the quantity of Steam keys sold during the proposed class period. For example:

- a. Users who redeem keys during the Class Period may have purchased them prior to the start of the Class Period, and users who purchased Steam keys following the start of the Class Period may not have redeemed them by December 31, 2022 (or at all).
- b. Keys issued during the Class Period may not have been listed for sale or purchased during the Class Period. While publishers do not necessarily earn revenue on every key issued, they do earn revenue on issued keys that were sold even if not redeemed.⁶⁷⁰

⁶⁷⁰ For example, as explained in Section 7.1.1, a consumer may find it cheaper to purchase an entire bundle of Steam keys containing a particular game on a competitor storefront than to purchase that individual game directly on Steam, leading a consumer to purchase a bundle of keys but redeeming only some of them. This is similar to a user who purchases a game on Steam but does not download, install, or play the game. Existing evidence suggests that almost one-third of games in users’ Steam libraries have not been played. See Simon Carless, “How many PC games get bought – but not played?” *The GameDiscoverCo Newsletter*, March 4, 2024, available at <https://newsletter.gamediscover.co/p/how-many-pc-games-get-bought-but>, accessed on April 20, 2024 (“On average, 32.7% of the games in people’s Steam library are unplayed.”).

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c. In instances where the name of the associated package does not indicate its purpose, my analyses may include some keys that were given away by publishers for promotional or other purposes rather than sold.

405. These limitations to my approximations cannot be resolved using available data and illustrate the need for individualized inquiry into the quantity of keys sold by each publisher.

12.2. Approximating the prices of Steam keys sold

406. As explained in Appendix Section 17.1, the data produced by Valve in this matter provide information on the prices and quantities of packages sold on Steam. Therefore, I consider two assumptions about the prices of Steam keys sold:

- a. The prices of Steam keys sold are equal to the price of the associated package on Steam.⁶⁷¹
- b. The prices of Steam keys sold are equal to the price of the associated package on Steam less some discount. As discussed in Section 4.1, I adopt a 20 percent discount for illustration.⁶⁷²

407. Using my first assumption, I approximate the prices for Steam key redemptions by calculating the same-day average transacted price on Steam for the associated package in the country of redemption. When no sales in the country of redemption occur on this date, I apply a stepwise approximation procedure that considers sales for wider time intervals and geographies as described in Appendix Section 17.2.1.

408. I then use the approximated prices for keys redeemed to aid my approximation of the prices of keys issued. When approximating the prices of issued keys, I calculate the average redeemed price of the package associated with the issued keys across all days and countries of redemption, as described in Appendix Section 17.2.

409. Using my second assumption, I apply a discount to the approximated prices described above to illustrate the potential effects of publishers offering lower prices for Steam keys on other platforms. As demonstrated in Appendix Section 14.1, many games are sold at lower prices by Steam key resellers than Steam. However, while ITAD data contains information on the daily list prices of games on Steam key resellers, ITAD data does not contain information on the average transacted prices of Steam keys on Steam key reseller sites, as discussed in Section 4.2.2. Given that I do not observe these transacted prices, I adopt a 20 percent discount to illustrate the sensitivity of effective revenue shares to discounts that many publishers offer on Steam key sales.

⁶⁷¹ I use “associated package on Steam” here to mean any package in Dr. Schwartz’s processed data either sharing a “package_id” with, or containing the same set of applications as, the “package_id” of the Steam key.

⁶⁷² Note that I adopt this figure only for illustration. As discussed in Section 4.2, determining the prices at which Steam keys are sold by each publisher, and how they are priced relative to the games’ Steam prices, requires individualized inquiry into how each publisher prices Steam keys.

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12.3. Approximating publishers' effective revenue shares

410. I approximate publishers' effective revenue shares by combining their nominal revenue share rates calculated from Dr. Schwartz's processed data with my approximations for quantities and prices of Steam keys sold as discussed above.
411. However, to ensure that all Steam-related revenues attributable to all proposed class members are included in my analysis, I make minor modifications to Dr. Schwartz's processed data to include all relevant revenues over the proposed class period. To begin, Dr. Schwartz does not calculate a nominal revenue share rate for [REDACTED] percent of total net revenues over this period; these revenues are therefore excluded from his calculations.⁶⁷³ I include these revenues in my calculations, assuming a nominal revenue share of 30 percent. Dr. Schwartz further limits the pool of revenue to adjust for the fact that "a small share of revenue is associated with outlier calculated commission rates due to the timing of recorded partner payments or rounding error from small transactions." To account for this, Dr. Schwartz rounds his calculated rates to the nearest percent, and calculates Valve's average nominal revenue share using the 15 rounded rates associated with the greatest revenues between January 28, 2017, and December 31, 2022. These rates account for [REDACTED] percent of revenues for which Dr. Schwartz calculates a revenue share over this period.⁶⁷⁴ In contrast, I do not limit the revenues considered in my calculation, and instead include all revenues at all rates calculated by Dr. Schwartz. These modifications to Dr. Schwartz's processed data allow me to consider all revenue attributable to all class members while keeping my estimates conservative.⁶⁷⁵
412. Combining the approximations for the quantities and prices of Steam keys sold as discussed above yields four approximations for each publisher's revenues from the sales of Steam keys, which I discuss in Section 4.1 of my report:
- a. **"Approximation 1"** assumes the number of Steam keys sold to be equal to the number of Steam keys redeemed, and the price at which those keys were sold to be equal to the games' transacted Steam prices.
 - b. **"Approximation 2"** assumes the number of Steam keys sold to be equal to the number of Steam keys redeemed, and the price at which those keys were sold to be equal to a 20 percent discount on the games' transacted Steam prices.
 - c. **"Approximation 3"** assumes the number of Steam keys sold to be equal to the number of Steam keys issued, and the price at which those keys were sold to be equal to the games' transacted Steam prices.

⁶⁷³ Workpaper 58. Dr. Schwartz is unable to map these revenues in the Valve revenue data to payments recorded in Valve's payments data, and therefore does not calculate a revenue share associated with these revenues.

⁶⁷⁴ Schwartz Report, Footnote 889; Schwartz Report, backup materials.

⁶⁷⁵ Including Dr. Schwartz's "outlier calculated commission rates" excluded from his calculations lead to a higher calculated nominal revenue share rate. Dr. Schwartz notes a revenue share rate of [REDACTED] percent during the class period using the "top 15 calculated commission rates," but a rate of [REDACTED] percent when all positive revenues are included. See Schwartz Report, Footnote 889 ("To be conservative I calculate the above effective rate [REDACTED] using the top 15 calculated commission rates between January, 28 2017 and December 31, 2022, which account for [REDACTED] of revenue in Valve's transaction data over this time. The effective rate for all calculated commission rates associated with positive revenue is modestly higher, at [REDACTED].").

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- d. “**Approximation 4**” assumes the number of Steam keys sold to be equal to the number of Steam keys issued, and the price at which those keys were sold to be equal to a 20 percent discount on the games’ transacted Steam prices.

413. Therefore, to approximate each publisher’s average effective revenue share, I apply the formula I present in Section 4.1 of my report:

$$\begin{aligned} \text{Publisher's effective revenue share rate} &= \frac{\text{Valve's portion of publisher's Steam revenues}}{\text{Publisher's total revenue from Steam-related sales}} = \\ &= \frac{\text{Valve's portion of publisher's Steam revenues}}{\text{Publisher's revenue from sales on Steam} + \text{Publisher's revenue from Steam key sales}} \end{aligned}$$

414. I calculate each element as follows over the Class Period:

- a. **Valve’s portion of publisher’s Steam revenues** is calculated by multiplying each publisher’s net revenues from sales on Steam by their nominal revenue share rates calculated by Dr. Schwartz, with the modifications discussed above.
- b. The **publisher’s revenue from sales on Steam** is calculated as the sum of net revenues on Steam attributable to that publisher.
- c. The **publisher’s revenue from Steam key sales** is calculated by multiplying the approximated quantities of keys with their approximated prices for each publisher, resulting in the four approximation methods discussed above.

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13. APPENDIX: SUPPLEMENTAL DESCRIPTIONS AND BACKUP MATERIALS FOR THE ANALYSIS OF PLATFORM FEATURES

13.1. Descriptions and backup materials for Exhibit 13 (timeline of Steam features and milestones)

1. **September 12, 2003—Milestone:** Steam launch.⁶⁷⁶
2. **October 7, 2004—Milestone:** Digital game purchases begin with *Half-Life 2* pre-orders.⁶⁷⁷
3. **October 12, 2005—Milestone:** Third-party games offered on Steam.⁶⁷⁸
4. **December 2006—Milestone:** Steam’s offerings grow to nearly 100 game titles.⁶⁷⁹
5. **August 7, 2007—Steam Community:** Adds a global friends list, voice chat, chat rooms, game lobbies, and pseudo-social networking features like rudimentary profiles and user groups.⁶⁸⁰
6. **November 26, 2007—Steam Achievements:** Brings achievement functionality to Steam. Achievements are rewards set by publishers to encourage and reward players for accomplishing tasks in their games.⁶⁸¹
7. **December 24, 2007—First storewide sale:** Storewide sale offering 10–50 percent off on all titles on Steam.⁶⁸²

⁶⁷⁶ Matt Sayer and Tyler Wilde, “The 19-year evolution of Steam,” *PC Gamer*, September 12, 2022, available at <https://www.pcgamer.com/steam-versions/>, accessed on December 6, 2023 (“2003: The beginning ... On September 12, Steam began life as a way for Valve to control the patching process for games like Counter-Strike, as well as curb cheating and provide easier access to any content the developer produced”).

⁶⁷⁷ Eric Bangeman, “Valve Steams up *Half-Life 2* preorders,” *Ars Technica*, October 7, 2004, available at <https://arstechnica.com/uncategorized/2004/10/4281-2/>, accessed on April 30, 2024 (“As the release of *Half-Life 2* (hopefully) draws nearer, Valve began offering preorders via its Steam service today.”).

⁶⁷⁸ Ben Kuchera, “Rag Doll Kung Fu given a date and price on Steam,” *Ars Technica*, September 19, 2005, available at <https://arstechnica.com/gaming/2005/09/1292/>, accessed on April 30, 2024 (“Well, the game, Rag Doll Kung Fu, has been picked up to be sold over Valve’s Steam service. The game is going to be released on October 12th, with a price of US\$12.95.”); Matt Sayer and Tyler Wilde, “The 19-year evolution of Steam,” *PC Gamer*, September 12, 2022, available at <https://www.pcgamer.com/steam-versions/>, accessed on December 6, 2023 (“In 2005, Ragdoll Kung Fu and Darwinia become the first non-Valve games to hit Steam.”).

⁶⁷⁹ Matt Sayer and Tyler Wilde, “The 19-year evolution of Steam,” *PC Gamer*, September 12, 2022, available at <https://www.pcgamer.com/steam-versions/>, accessed on December 6, 2023 (“By the end of the year, there are almost 100 games available on Steam.”).

⁶⁸⁰ Ben Kuchera, “Valve launches Steam Community, perhaps a bit soon,” *Ars Technica*, August 7, 2007, available at <https://arstechnica.com/gaming/2007/08/valve-launches-steam-community-perhaps-a-bit-soon/>, accessed on April 30, 2024 (“The Steam Community is an ambitious new set of features added to the Steam client, things like a global friends list, voice chat, chat rooms, game lobbies, and some pseudo-social networking features like rudimentary profiles and user groups. As a plus, several of the features like messaging, your friend list, and voice chat are all slated to be available in and out of game.”).

⁶⁸¹ Andy Robinson, “Valve brings achievements to Steam,” *GamesRadar+*, November 26, 2007, available at <https://www.gamesradar.com/valve-brings-achievements-to-steam/>, accessed on April 30, 2024 (“Team Fortress 2 will be the first to receive the in-game accolades - which work in pretty much the same ways as Xbox 360 Achievements - and other Valve games such as Day of Defeat: Source and *Half-Life 2* will apparently follow.”); Steamworks, “Step by Step: Achievements,” available at https://partner.steamgames.com/doc/features/achievements/ach_guide, accessed on April 30, 2024 (“Achievements can be used as a way to encourage and reward player interactions and milestones within your game.”).

⁶⁸² Steam, “Steam Storewide Sale – All Games 10-50% Off!” December 24, 2007, available at <https://web.archive.org/web/20071228151102/http://www.steampowered.com/v/index.php?area=news&id=1382&cc=US>, accessed on April 30, 2024 (“The first-ever Steam storewide sale is happening now! Save 10-50% on every game in every genre from every developer and publisher on Steam.”).

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8. **January 2008—Milestone:** Steam reaches 1 million concurrent users.⁶⁸³
9. **April 30, 2008—Steamworks Development Kit developer tools for Steam integration:** Opens Steam’s online multiplayer and game purchase authentication to the development community. Steamworks features include product key authentication, copy protection, auto-updating, social networking, matchmaking, and anti-cheat technology.⁶⁸⁴
10. **November 3, 2008—Steam Cloud:** Stores application data online (e.g., game save files) and enables consistent user experiences from any PC.⁶⁸⁵
11. **December 26, 2008—First Steam Holiday Sale:** First “Holiday Sale” offering discounts on many games across the Steam platform over the holiday season.⁶⁸⁶
12. **April 2010—MacOS support/Steam Play:** Adds support for MacOS games and introduces Steam Play, allowing users to access Windows, Mac, and Linux versions of Steam games (when available) with a single purchase.⁶⁸⁷
13. **April 14, 2010—Steam Store Wishlists:** Adds a wishlist for users to keep track of what games they want and see what games their friends want. Enables publishers to access data on wishlist additions, conversions, and regional breakdowns for their own games.⁶⁸⁸

⁶⁸³ SteamDB, “Steam,” available at <https://steamdb.info/app/753/charts/>, accessed on April 30, 2024 (“January 2008 ... 1,273,794”).

⁶⁸⁴ Chris Remo, “Valve Releases Full Steamworks Development Kit,” *Game Developer*, April 30, 2008, available at <https://www.gamedeveloper.com/pc/valve-releases-full-steamworks-development-kit>, accessed on April 30, 2024 (“Valve has released the full version of its free previously-announced Steamworks development and publishing tools, which open up Steam’s online multiplayer and game purchase authentication features to the development community ... Steamworks features include product key authentication, copy protection, auto-updating, social networking, matchmaking, and anti-cheat technology.”). See Steamworks, “Features,” available at <https://partner.steamgames.com/doc/features>, accessed on April 19, 2024 for a comprehensive list of current Steamworks features.

⁶⁸⁵ Steam, “Steam Cloud Rolling In This Week,” November 3, 2008, available at <https://store.steampowered.com/oldnews/1968>, accessed on April 30, 2024 (“Valve, creators of best-selling entertainment products and advanced technologies, today announced the roll out of Steam Cloud, a set of services for Steam that stores application data online and allows user experiences to be consistent from any PC. Steam Cloud is a free extension to Steam, a leading a platform for PC games with over 15 million accounts worldwide.”); Steam Support, “Steam Cloud,” available at <https://help.steampowered.com/en/faqs/view/68D2-35AB-09A9-7678>, accessed on April 30, 2024 (“The Steam Cloud allows games and the platform to utilize cloud storage hosted by Steam. Games can utilize Steam Cloud for storage of many different types of data, including game settings, save games, profile stats and other user-specific bits. Many Steam client settings are also saved via the cloud, including collections, friend nicknames and anything changed via the Steam client Settings menu. These settings will persist on an account regardless of which machine it is logged into, as the settings are pulled from the cloud upon login.”).

⁶⁸⁶ Steam, “Steam Holiday Sale on Now,” December 26, 2008, available at <https://store.steampowered.com/oldnews/2127>, accessed on April 30, 2024 (“The Steam Holiday sale is on now.”).

⁶⁸⁷ AppleInsider, “Valve announces Steam for Mac, games will allow Mac-PC online play,” March 8, 2010, available at https://appleinsider.com/articles/10/03/08/valve_announces_steam_for_mac_will_allow_mac_pc_online_play.html, accessed on April 30, 2024 (“Valve officially revealed Monday that its Steam online gaming service, along with the Source engine that powers titles such as Half-Life 2 and Left 4 Dead 2, is coming to the Mac in April.”); Steam, “Introducing a new version of Steam Play,” available at <https://steamcommunity.com/games/221410/announcements/detail/1696055855739350561>, accessed on April 30, 2024 (“In 2010, we announced Steam Play: a way for Steam users to access Windows, Mac and Linux versions of Steam games with a single purchase.”).

⁶⁸⁸ Steam, “A Brand New Steam – Available Now!” April 14, 2010, available at <https://store.steampowered.com/uiupdate/>, accessed on April 30, 2024 (“Added Wishlists for tracking what games you want, and to see what games your friends want”); Maria Dealessandri, “A game developer’s guide to Steam wishlists,” *GamesIndustry.biz*, May 15, 2020, available at

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14. **June 24, 2010—First Steam Summer Sale:** First “Summer Sale” offering discounts on many games across the Steam platform during the Summer season.⁶⁸⁹
15. **September 30, 2010—Steam Wallet and in-game transactions:** In-game transaction support introduced on Steam. Steam Wallet enables users to add value to their Steam account using any of the payment methods supported by Steam. Funds may then be used for game purchases and in-game transactions.⁶⁹⁰
16. **February 24, 2011—Steam Screenshots:** Adds functionality making it easier for users to take and share screenshots of games. Screenshots can also be shared on a user’s profile, or otherwise kept private.⁶⁹¹
17. **March 16, 2011—Steam Guard:** Introduces new account security features for Steam users, including one-time authorization codes for unrecognized log-ins.⁶⁹²
18. **June 14, 2011—Free to Play support:** Introduces Free to Play game support to Steam. Enables publishers to implement new monetization strategies on Steam and makes Free to Play games available to Steam users.⁶⁹³
19. **October 2011—Steam Workshop:** Introduces a central hub of player-created content (e.g., “mods”) and tools to publish, organize, and download that content into games.⁶⁹⁴

<https://www.gamesindustry.biz/a-game-developer-guide-to-steam-wishlists>, accessed on April 30, 2024 (“Developers can access wishlist data such as additions, conversions, and regional breakdowns for their games,” Valve’s Tom Giardino says.”).

⁶⁸⁹ Steam, “Perils of Summer’ Steam Sale Begins Today,” June 24, 2010, available at <https://store.steampowered.com/oldnews/3985>, accessed on April 30, 2024 (“We urge you to play it safe, stay inside and save big with the ‘Perils of Summer’ sale beginning today on Steam.”).

⁶⁹⁰ Steam, “Steam Wallet and In-Game Transactions are Here!” September 30, 2010, available at <https://store.steampowered.com/oldnews/4406>, accessed on May 1, 2024 (“With Steam Wallet, you can add value to your Steam account using any of the payment methods supported by Steam. Funds in your Steam Wallet may then be used to buy any item available in the Steam store on an in-game store. You can load up your Steam Wallet ahead of time, or wait until checkout. Also, different payment methods can be combined to make a single purchase.”).

⁶⁹¹ Steam, “Steam Screenshots Feature Now Available,” February 24, 2011, available at <https://store.steampowered.com/oldnews/5047>, accessed on April 30, 2024 (“Press your hotkey (F12 by default) while in any game that runs the Steam Overlay to take screenshots. Then publish them to your Steam Community profile as well as Facebook, Twitter, or Reddit to share them with your friends.”).

⁶⁹² Steam, “Steam Guard Now Available to All,” March 16, 2011, available at <https://store.steampowered.com/oldnews/5123>, accessed on April 30, 2024 (“With Steam Guard enabled, anyone attempting to sign in as you from an unrecognized computer or browser must first provide additional, one-time authorization.”).

⁶⁹³ Stephany Nunneley-Jackson, “Free to Play games now available on Steam,” *VG247*, June 14, 2011, available at <https://www.vg247.com/free-to-play-games-now-available-on-steam>, accessed on April 30, 2024 (“Valve has introduced support for Free to Play games on Steam with the launch of five games on the service.”).

⁶⁹⁴ Steam, “Steam Workshop Lets Item Creators Compensate Toolmakers, Communities, and Mentors,” June 27, 2013, available at <https://steamcommunity.com/games/SteamWorkshop/announcements/detail/1819734886367365945>, accessed on April 30, 2024 (“Since the Steam Workshop launched in October of 2011, over 1,200 items created by members of the community have been made available for sale in Team Fortress 2 and Dota 2, producing over \$10 million in royalties paid to item creators.”); Jeremy Laukkonen, “Everything You Need to Know About Steam Workshop,” *Lifewire*, February 13, 2020, available at <https://www.lifewire.com/everything-you-need-to-know-about-steam-workshop-4587072>, accessed on May 14, 2024 (“The Steam Workshop is a mod repository for Steam Games. When a developer releases a game on Steam, and that game has mod support, they have the option to tie it into the Steam Workshop. Linking to the Steam Workshop allows creators to upload their mods for a massive built-in audience to enjoy, and it provides regular players with a straightforward and streamlined process for obtaining mods.”).

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20. **January 2012—Milestone:** Steam reaches 5 million concurrent users.⁶⁹⁵
21. **January 27, 2012—Steam Mobile App:** Steam Mobile App for iOS and Android devices announced. Gives users access to many Steam features on mobile devices.⁶⁹⁶
22. **August 13, 2012—Game Hubs:** Game Hubs are collections of game-centric discussions, workshop items, screenshots, videos, and news. They contain both community-created and official content, promoting content that is highly-rated by Steam users.⁶⁹⁷
23. **August 30, 2012—Steam Greenlight:** Enables developers and publishers to post information and media about their game titles in an effort to convince the community that the game should be released on Steam. Titles gaining sufficient community support would eventually be released on Steam.⁶⁹⁸
24. **December 3, 2012—Big Picture Mode:** Big Picture Mode enables users to use Steam on their television or large screen monitor with a controller.⁶⁹⁹
25. **December 12, 2012—Steam Community Market:** The Steam Community Market enables users to buy and sell in-game items using their Steam Wallet funds.⁷⁰⁰
26. **February 20, 2013—SteamPipe content delivery system:** Introduces a new content delivery system in order to speed up user downloads and improve the efficiency of game updates by only downloading the differences between the new version and the prior version. Additionally allowed users to set limits on their download speeds.⁷⁰¹

⁶⁹⁵ SteamDB, “Steam,” available at <https://steamdb.info/app/753/charts/>, accessed on April 30, 2024 (“January 2012 ... 5,074,748”).

⁶⁹⁶ Steam, “Valve Announces Steam Mobile App,” January 27, 2012, available at <https://store.steampowered.com/oldnews/7231>, accessed on April 30, 2024 (“Valve, creators of best-selling game franchises (such as Counter-Strike, Half-Life, Left 4 Dead, Portal, and Team Fortress) and leading technologies (such as Steam and Source), today announced the beta release of the Steam application for iOS and Android devices.”).

⁶⁹⁷ Seth Colaner, “Steam Community Game Hub Brings Out User-Created Content and Rating System,” *Hot Hardware*, August 13, 2012, available at <https://hothardware.com/news/steam-community-gets-new-features-each-day-this-week-starting-with-game-hubs>, accessed on April 30, 2024 (“Each gaming title on Steam will get a Game Hub, which will include ‘collections of game-centric discussions, workshop items, user-created screenshots, videos, and news.’ The content will be a combination of official Steam items and user-created posts. Users can rate everything, so only the best stuff rises to the top. Further, the Game Hub allows users to chat about a given game right there, instead of having to zip over to the Steam Forums.”).

⁶⁹⁸ Steam, “Valve Launches Steam Greenlight,” August 30, 2012, available at <https://store.steampowered.com/oldnews/8761>, accessed on April 30, 2024 (“Announced earlier this summer, Steam Greenlight allows developers and publishers to post information and media about their game in an effort to convince the Community that the game should be released on Steam. Greenlight piggybacks on Steam Workshop’s flexible system that organizes content and lets customers rate and leave feedback.”).

⁶⁹⁹ Steam, “Steam Big Picture Available Now,” December 3, 2012, available at <https://store.steampowered.com/oldnews/9495>, accessed on April 30, 2024 (“Valve today announced the public release of Big Picture, Steam’s new mode that lets gamers access all of their favorite Steam games on a television from the comfort of their sofa. Big Picture has been designed to be used with a traditional gamepad, while also fully supporting keyboard and mouse input.”).

⁷⁰⁰ Eddie Makuch, “Valve launches Steam Market,” *GameSpot*, December 12, 2012, available at <https://www.gamespot.com/articles/valve-launches-steam-market/1100-6401485/>, accessed on April 30, 2024 (“The virtual market allows users to buy and sell in-game items using their Steam Wallet funds.”).

⁷⁰¹ Omri Petite, “Team Fortress 2, CS: Source migrating to SteamPipe delivery – here’s what you need to do,” *PC Gamer*, February 20, 2013, available at <https://www.pcgamer.com/steampipe-valve/>, accessed on April 30, 2024 (“Some older Source games creak along on an older format from an earlier age in Steam’s saga, but in a new FAQ, Valve says it’s converting the guts

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27. **March 20, 2013—Early Access:** Enables the community to get involved early by purchasing and playing select titles during their development. Enables users to play games prior to release and provide feedback, while also allowing developers to sell their game and gather user feedback.⁷⁰²
28. **April 25, 2013—Steam Subscription Plans:** Offers consumers the ability to sign up and manage payments for subscription-based games on Steam.⁷⁰³
29. **June 26, 2013—Steam Trading Cards:** Steam Trading Cards are virtual cards one can earn by playing games on Steam. Collecting cards lets one craft new badges for their Steam Profile and earn rewards like emoticons, profile backgrounds, and coupons.⁷⁰⁴
30. **September 11, 2013—Family Sharing:** Enables close friends and family members to share their libraries of Steam games while each earning their own Steam achievements and storing their own saves and application data to the Steam cloud.⁷⁰⁵
31. **November 26, 2013—User review system:** Helps customers make an informed decision when considering the purchase of a new game by encouraging customers to share their experience in a game so that others can decide for themselves whether the game is something they would enjoy playing.⁷⁰⁶

of these games to use the SteamPipe content delivery system for faster load times and an updated file layout.”); Jeremy Peel, “What is SteamPipe?” *PCGamesN*, May 3, 2013, available at <https://www.pcgamesn.com/tf2/what-steampipe>, accessed on May 1, 2024 (“SteamPipe has also allowed for a new feature within Steam: the ability to set download rates.”).

⁷⁰² Steam, “Steam Opens Early Access,” March 20, 2013, available at <https://store.steampowered.com/oldnews/10189>, accessed on April 30, 2024 (“Steam Early Access titles allow the community to get involved early and play select titles during their development. The goal of Early Access is to provide gamers with the chance to ‘go behind the scenes’ and experience the development cycle firsthand and, more importantly, have a chance to interact with the developers by providing them feedback while the title is still being created.”).

⁷⁰³ Steam, “Steam Introduces Game Subscription Plans,” April 25, 2013, available at <https://store.steampowered.com/oldnews/10463>, accessed on April 30, 2024 (“With Subscription Plans, Steam offers gamers the ability to sign up and manage payments for subscription-based games on Steam. The launch title for the new service is *Darkfall Unholy Wars*, with additional subscription-based games to follow.”).

⁷⁰⁴ Steam, “Steam Trading Cards Released, Community Profiles Updated,” June 26, 2013, available at <https://store.steampowered.com/oldnews/10946>, accessed on April 30, 2024 (“Steam Trading Cards are virtual cards you can earn just by playing some of your favorite games, like *Team Fortress 2*, *FTL*, *GRID 2*, *Monaco*, *Trine 2*, *Super Meat Boy*, *Counter-Strike: Global Offensive*, and more. In total there are over 30 games with Steam Trading Cards, with more being added every week. Collecting cards lets you craft new badges for your Steam Profile and earn rewards like emoticons, profile backgrounds, and coupons.”).

⁷⁰⁵ Steam, “Steam Announces Family Sharing,” September 10, 2013, available at <https://store.steampowered.com/oldnews/11436>, accessed on April 30, 2024 (“Steam Family Sharing is designed for close friends and family members to play one another’s Steam games while each earning their own Steam achievements and storing their own saves and application data to the Steam cloud. It’s all enabled by authorizing a shared computer.”).

⁷⁰⁶ Steam, “More Updates to the Steam Customer Review System,” September 13, 2016, available at <https://store.steampowered.com/oldnews/24155>, accessed on April 30, 2024 (“When we introduced the Steam Customer Review System in November 26, 2013, our primary goal was, and still is, to help customers make an informed decision when considering the purchase of a new game. To achieve that goal, we’ve put an emphasis on written reviews that encourage customers to share their experience in a game so that [others] can decide for themselves whether the game sounds like something they would enjoy playing.”).

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32. **February 26, 2014—Partner discount self-configuration tools:** Enables publishers to configure their own discounts for customer sale periods or opt in to take part in upcoming weeklong sales.⁷⁰⁷
33. **March 18, 2014—VR mode:** Introduced an official method of accessing Steam’s VR mode allowing a user to interact with Steam in VR.⁷⁰⁸
34. **May 21, 2014—In-Home Streaming:** Enables users with multiple computers on the same network to automatically connect and remotely install, launch, and play games as though they were sitting at the computer running the Steam client.⁷⁰⁹
35. **September 23, 2014—Discovery Update:** Updated users’ Steam Store homepages to include game recommendations such as the “Discovery Queue,” “Steam Curators,” and a “Recommendation Feed” to make it easier for users to find what they want when shopping for a new game experience.⁷¹⁰
36. **June 2, 2015—Support/refund policy:** Introduces a system where users can request a refund for a game within 14 days of purchase if they played a game for less than two hours.⁷¹¹
37. **June 14, 2015—Milestone:** Steam reaches 10 million concurrent users.⁷¹²
38. **June 2, 2016—Steam Bundles:** Enables publishers to bundle together multiple games or products on Steam and sell them at a discount. This feature helps facilitate

⁷⁰⁷ Steam, “Now You Can Discount Your Own Products In Steam,” February 26, 2014, available at <https://steamcommunity.com/groups/steamworks/announcements/detail/1497749712681365701>, accessed on April 30, 2024 (“With new Steamworks tools, you can configure your own discounts for custom sale periods or opt in to take part in upcoming weeklong sales. Once configured, the discounts will automatically start at the time specified.”).

⁷⁰⁸ Katie Williams, “Virtual Reality Mode Formally Added to Steam Beta,” *IGN*, March 18, 2014, available at <https://www.ign.com/articles/2014/03/18/virtual-reality-mode-formally-added-to-steam-beta>, accessed on April 30, 2024 (“Today’s Steam beta client update has officially integrated a Virtual Reality mode.”).

⁷⁰⁹ Steam, “Introducing Steam In-Home Streaming,” May 21, 2014, available at <https://store.steampowered.com/oldnews/13378>, accessed on April 30, 2024 (“In-Home Streaming, a new feature of Steam, is now released to all users. Players who have multiple computers at home can immediately take advantage of the new feature. When you log into Steam on two computers on the same network, they automatically connect, allowing you to remotely install, launch, and play games as though you were sitting at the remote PC.”).

⁷¹⁰ Tyler Wilde, “Big changes to Steam: ‘Discovery Update’ adds curators, recommendations, and hides unpopular new releases,” *PC Gamer*, September 22, 2014, available at <https://www.pcgamer.com/steam-update/>, accessed on April 30, 2024 (“Further addressing the problem of figuring out which games to buy, the update also lets you follow ‘Steam Curators.’ Curators can be any individual or organization who has opinions about games and wants to share them, and Steam now offers a nice page where they can organize their recommendations. Following a curator (you can find them here) will also send their recommendations to your home page.”); Steam, “Steam Discovery Update,” available at <https://store.steampowered.com/about/newstore>, accessed on April 30, 2024 (“Your Steam Discovery Queue is a powerful, new way of exploring the most popular new releases that you haven’t yet seen ... Steam Curators are individuals, organizations, and groups that publish reviews and recommendations in a public forum on Steam ... The Steam Recommendation Feed is a nearly endless list of recommendations designed to showcase the broad variety of titles available on Steam.”).

⁷¹¹ Kyle Orland, “Valve begins offering refunds for all Steam games,” *Ars Technica*, June 2, 2015, available at <https://arstechnica.com/gaming/2015/06/valve-begins-offering-refunds-for-all-steam-games/>, accessed on April 19, 2024 (“Valve will, upon request via help.steampowered.com, issue a refund for any reason, if the request is made within 14 days of purchase, and the title has been played for less than two hours.”).

⁷¹² Sarah Lamotte, “Steam hits 10m concurrent users,” *VG247*, June 14, 2015, available at <https://www.vg247.com/steam-10-million-concurrent-users>, accessed on April 30, 2024 (“The Summer Sale has helped drive the platform through a massive milestone, with over 10 million users online simultaneously this weekend.”); SteamDB, “Steam,” available at <https://steamdb.info/app/753/charts/>, accessed on April 30, 2024 (“June 2015 ... 10,269,167”).

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the creation and sale of “Deluxe Editions” as well as collections of publishers’ past game releases.⁷¹³

39. **October 12, 2016—Milestone:** Steam’s offerings surpass 10,000 game titles.⁷¹⁴
40. **November 7, 2016—Discovery Update 2.0:** Introduces new features and functionality to the Steam Store, including new preferences options, expanded curator support, increased store personalization, and game recommendations based on friends’ activity.⁷¹⁵
41. **December 31, 2016—Steam Awards:** First Steam Awards, a game awards event where users can nominate and vote for their favorite games.⁷¹⁶
42. **February 23, 2017—Steam Audio:** Offers a spatial audio solution to developers of games and VR apps at zero cost.⁷¹⁷
43. **June 13, 2017—Steam Direct:** Enables any publisher to publish and sell their game on Steam for a \$100 fee per title. This cost is recouped by the publisher once a game reaches \$1,000 in sales. Replaces Steam Greenlight.⁷¹⁸

⁷¹³ Steam, “Create Your Own Steam Bundles,” June 2, 2016, available at <https://steamcommunity.com/groups/steamworks/announcements/detail/932622787937370414>, accessed on April 30, 2024 (“Steam Bundles is a feature that allows multiple Steam products to be bundled together at a discount. This can be used for easily creating Deluxe Editions or for putting together collections of a developer’s past releases and allow customers to ‘complete their set’ of that game catalog.”).

⁷¹⁴ Paul Younger, “There are now more than 10,000 games on Steam,” *PCInvasion*, October 12, 2016, available at <https://www.pcinvasion.com/now-10000-games-steam/>, accessed on April 30, 2024 (“In an announcement for Steam Dev Days, which is about start in Seattle, Valve revealed there is now more than 10,000 games on Steam for Windows, Linux, Mac and multiple VR platforms.”).

⁷¹⁵ Steam, “Steam Discovery Update 2.0 Available Now,” November 7, 2016, available at <https://steamcommunity.com/groups/steamworks/announcements/detail/880845734465610237>, accessed on April 30, 2024 (“Available now, the Steam Discovery Update 2.0 expands the platform with tools and features designed to give gamers more control and choice in their Steam experience. The first Discovery Update was launched two years ago, and dozens of iterative changes have been made since. Today’s update introduces a larger collection of new features and functionality based on user feedback such as a powerful new preferences options, expanded support for curators, and easier access to your friends’ activity.”); Steam, “Steam Discovery Update 2.0,” available at https://store.steampowered.com/about/newstore2016?snr=2_groupannouncements_detail, accessed on May 13, 2024 (“Whether it’s a hot new release, joining a special event, or getting back into a game that was recently updated, now it’s easy to tell what your friends are excited about ... Most lists across the store, including this section, are now personalized to filter out games you own or marked ‘ignored’.”).

⁷¹⁶ Steam, “The Steam Awards Winners!” December 31, 2016, available at <https://store.steampowered.com/oldnews/26623>, accessed on April 30, 2024 (“Thanks to all that voted in The Steam Awards!”); Ethan Gach, “Here Are The 2016 Winners Of The First Ever Steam Awards,” *Kotaku*, December 31, 2016, available at <https://kotaku.com/here-are-the-2016-winners-of-the-first-ever-steam-award-1790658305>, accessed on May 13, 2024 (“Users were encouraged to nominate the games they thought most deserved to win each category with Valve giving the people who did so special badges.”).

⁷¹⁷ Steam, “Introducing Steam Audio,” February 23, 2017, available at <https://steamcommunity.com/groups/steamworks/announcements/detail/661305015032637648>, accessed on April 30, 2024 (“Steam Audio is now available, delivering an advanced spatial audio solution for games and VR apps. Steam Audio includes several exciting features that significantly improve immersion and open up new possibilities for spatial audio design. The Steam Audio SDK is available free of charge, for use by teams of any size, without any royalty requirements. Steam Audio currently supports Windows, Linux, macOS, and Android. Just like Steam itself, Steam Audio is available for use with a growing list of VR devices and platforms.”).

⁷¹⁸ Jeffrey Matulef, “Steam Greenlight to be replaced with Steam Direct next week,” *Eurogamer*, June 6, 2017, available at <https://www.eurogamer.net/steam-greenlight-to-be-replaced-with-steam-direct-next-week>, accessed on April 19, 2024 (“After nearly five years Valve’s crowd-voting platform Steam Greenlight is coming to an end, only to be replaced by Steam Direct on 13th June. As previously discussed, Steam Direct will allow any developer to post their game to Valve’s marketplace so long as they pay a \$100 fee per title. This fee can later be recouped once a game reaches \$1k in sales.”).

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44. **June 19, 2018—Developer & Publisher Homepages:** Enables developers and publishers to have homepages designed to help players discover and connect with the developers and publishers behind their favorite games. This enables players to explore the full catalog of games created by the developers they enjoy and be notified when these developers release new titles.⁷¹⁹
45. **July 24, 2018—Steam Chat update:** Includes a more streamlined friends list and adds support for voice chat channels, group chats, and other social features.⁷²⁰
46. **August 21, 2018—Proton:** Updates Steam Play by introducing a compatibility layer allowing Linux compatibility with a wide range of Windows-only games.⁷²¹
47. **October 1, 2018—Additional revenue share tiers:** Introduces new revenue share tiers for games that hit certain revenue levels. Starting from October 1, 2018, when a game makes over \$10 million on Steam, the revenue share for that application will adjust to 75 percent/25 percent on earnings beyond \$10 million. At \$50 million, the revenue share will adjust to 80 percent/20 percent on earnings beyond \$50 million.⁷²²
48. **January 13, 2019—Milestone:** Steam’s offerings surpass 30,000 game titles.⁷²³

⁷¹⁹ Steam, “Announcing: Developer & Publisher Homepages Beta on Steam,” June 19, 2018, available at <https://steamcommunity.com/games/593110/announcements/detail/2515705802687784921>, accessed on April 30, 2024 (“We’ve just launched an open beta for Creator Homepages, a new part of the Steam store designed to help players discover and connect with the developers and publishers behind their favorite games. With this feature, you can explore the full catalog of games created by the developers and publishers of games you enjoy and you can choose to follow those creators to be automatically notified when they release their next title.”).

⁷²⁰ Nick Statt, “Steam is rolling out its new Discord-like chat feature to all users,” *The Verge*, July 24, 2018, available at <https://www.theverge.com/2018/7/24/17609872/steam-chat-new-features-roll-put-discord-like-competition>, accessed on April 30, 2024 (“The new updates are mainly around design and chat versatility. Now you can share GIFs and rich social and video links with friends in Steam Chat, sort friends by favorites, group your friends by game and by party, and maintain more fully featured group chats that are designed more like Discord servers. Steam Chat also now offers built-in voice chat with many of the same perks, like channels and link inviting, that you get with Discord.”); Steam, “The All-New Steam Chat,” available at <https://steamcommunity.com/updates/chatupdate>, accessed on April 30, 2024.

⁷²¹ *Ars Technica*, “Valve’s ‘Steam Play’ uses Vulkan to bring more Windows games to Linux,” August 21, 2018, available at <https://arstechnica.com/gaming/2018/08/valves-steam-play-uses-vulkan-to-bring-more-windows-games-to-linux/>, accessed on April 30, 2024 (“Valve announced today a beta of Steam Play, a new compatibility layer for Linux, to provide compatibility with a wide range of Windows-only games ... The announcement today spells out in full what the company has developed. At its heart is a customized, modified version of the WINE Windows-on-Linux compatibility layer named Proton ... Once Steam Play is out of beta, developers of Windows games will be able to mark their games as being Steam Play compatible and, hence, will be offered for sale to Linux users.”).

⁷²² Steam, “New Revenue Share Tiers and other updates to the Steam Distribution Agreement,” December 1, 2018, available at <https://steamcommunity.com/groups/steamworks/announcements/detail/1697191267930157838>, accessed on April 18, 2024 (“With that in mind, we’ve created new revenue share tiers for games that hit certain revenue levels. Starting from October 1, 2018 (i.e. revenues prior to that date are not included), when a game makes over \$10 million on Steam, the revenue share for that application will adjust to 75%/25% on earnings beyond \$10M. At \$50 million, the revenue share will adjust to 80%/20% on earnings beyond \$50M. Revenue includes game packages, DLC, in-game sales, and Community Marketplace game fees. Our hope is this change will reward the positive network effects generated by developers of big games, further aligning their interests with Steam and the community.”).

⁷²³ Jonathan Bolding, “Steam now has 30,000 games,” *PC Gamer*, January 13, 2019, available at <https://www.pcgamer.com/steam-now-has-30000-games/>, accessed on April 30, 2024 (“Quietly, softly, some time in the past few weeks, Steam has reached a grand total of over 30,000 games.”).

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49. **June 13, 2019—Remote Play:** Expands in-home streaming by allowing users to stream games from their Steam client wherever they are.⁷²⁴
50. **July 2019—Steam Labs:** Enables users and publishers to see and test prospective Steam features and provide feedback on them.⁷²⁵
51. **October 21, 2019—Remote Play Together:** Enables players to play split-screen or shared-screen multiplayer games with friends over the internet without any additional work by the games’ developers.⁷²⁶
52. **October 30, 2019—Steam Library Update:** Introduces a variety of updates to users’ Steam Library pages, giving quick access to game updates, recently played games, friends’ activity, and game collections. Rolls out new publisher tools for posting events and announcements about their games.⁷²⁷
53. **December 12, 2019—Steam Game Festival/Steam Next Fest:** Introduces a multi-day event of showcasing upcoming games using game demos, game developer livestreams, and the ability to chat with teams about games currently in development.⁷²⁸

⁷²⁴ Steam, “Steam Client Update Released,” June 13, 2019, available at <https://store.steampowered.com/oldnews/51761>, accessed on April 30, 2024 (“Steam In-Home Streaming is experimentally available outside the home, and is now known as Steam Remote Play. Your Steam clients can now stream games from each other wherever they are, as long as there is a good network connection on both sides and they are close to a Steam datacenter”).

⁷²⁵ Matthew Handrahan, “Valve’s advice for making your game thrive after launch,” *GamesIndustry.biz*, April 24, 2020, available at <https://www.gamesindustry.biz/valves-advice-to-keep-your-game-thriving-after-launch>, accessed on October 23, 2023 (“Steam Labs, which launched in July 2019, is an attempt to let developers see what’s coming, and influence the way new features are shaped.”); Steam, “Steam Labs,” available at <https://store.steampowered.com/labs>, accessed on April 30, 2024 (“Every year, we create dozens of experiments around discoverability, video, machine learning, and more. You know who we thought might enjoy seeing them? Everyone. For the first time, you can try, share, and break them, then share your feedback with the developers who create them.”).

⁷²⁶ Steam, “Introducing Steam Remote Play Together,” October 21, 2019, available at <https://steamcommunity.com/games/593110/announcements/detail/3032537193879549687>, accessed on April 30, 2024 (“With Remote Play Together, you can now invite Steam Friends to join your local co-op, local multiplayer, and shared/split screen games online. Up to four players, can instantly join in the fun. Only the host needs to own and install the game, while additional players connect through Steam Remote Play streaming technology.”).

⁷²⁷ Steam, “Steamworks Fall Recap: Steam Library Release, Remote Play Together, DAU Reporting, Store Page Tools, And More,” December 9, 2019, available at <https://steamcommunity.com/groups/steamworks/announcements/detail/1706232080103449103>, accessed on April 30, 2024 (“The biggest announcement of the past couple of months is the Steam Library Update, which rolled out of beta and updated Steam for all players on October 30. This update brings a fresh new look to the Steam library that better highlights the games in a player’s library and makes it easy to find something to play. This new update also brings better channels for game developers to communicate about updates, events, and announcements to players and fans.”); Steam, “The New Steam Library,” available at <https://store.steampowered.com/libraryupdate>, accessed on April 30, 2024 (“The new library home gives you quick access to game updates, recently played games, friends’ activity and collections.”).

⁷²⁸ Austen Goslin, “The Game Awards offers an E3-esque buffet of Steam demos for unreleased games,” *Polygon*, December 11, 2019, available at <https://www.polygon.com/2019/12/11/21011169/the-game-awards-steam-game-festival-demos>, accessed on April 30, 2024 (“The Festival is designed to work hand-in-hand with the Game Awards to give players the chance to try out some new games being discussed on the show with Steam acting as the digital event space.”); Alex Calvin, “Steam Game Festival rebrands as Steam Next Fest, set to take place in June,” *VG247*, March 24, 2021, available at <https://www.vg247.com/steam-game-festival-steam-next-fest-june>, accessed on April 30, 2024 (“Explore and play hundreds of game demos, watch developer livestreams, and chat with the teams about their games in progress, coming soon to Steam.”).

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54. **March 15, 2020—Milestone:** Steam reaches 20 million concurrent users.⁷²⁹
55. **June 25, 2020—Points Shop:** Enables users to earn points from purchases that can be used to acquire digital items like animated stickers, backgrounds, and avatars.⁷³⁰
56. **December 14, 2020—Steam News Hub:** Introduces a centralized place for players to browse news, updates, and events happening in the games they care about.⁷³¹
57. **February 12, 2021—Milestone:** Steam’s offerings surpass 50,000 game titles.⁷³²
58. **April 21, 2021—Steam Playtest:** Enables developers to set up and run a playtest within Steam for free without having to manage keys or external mailing lists.⁷³³
59. **February 25, 2022—Steam Deck integration:** Introduced support for the Steam Deck, a handheld gaming console developed by Valve.⁷³⁴
60. **September 7, 2022—Personalized store hubs:** Introduces new Steam Store hubs making it easier to explore all kinds of different niches within Steam using tags, so players can dive deep into each area and narrow down to exactly what game they are

⁷²⁹ Jody Macgregor, “Steam has a record-breaking 20 million concurrent users as coronavirus keeps people home,” *PC Gamer*, March 15, 2020, available at <https://www.pcgamer.com/steam-has-a-record-breaking-20-million-concurrent-users-as-coronavirus-keeps-people-home/>, accessed on April 30, 2024 (“A record-breaking 20 million concurrent users as counted by SteamDB—20,313,451 to be precise, with 6.2 million of those people in-game.”); SteamDB, “Steam,” available at <https://steamdb.info/app/753/charts/>, accessed on April 30, 2024 (“March 2020 ... 23,822,540”).

⁷³⁰ Andy Chalk, “Steam launches a permanent Points Shop,” *PC Gamer*, June 25, 2020, available at <https://www.pcgamer.com/steam-launches-a-permanent-points-shop/>, accessed on May 1, 2024 (“One of the things you can do in this year’s Steam Summer Sale is earn points that can be used to acquire digital items like animated stickers, backgrounds, and avatars.”).

⁷³¹ Steam, “New Steam News Hub: More Ways to Communicate With Players,” December 14, 2020, available at <https://steamcommunity.com/groups/steamworks/announcements/detail/2947007387776397379>, accessed on April 30, 2024 (“Today we’ve fully launched the Steam News Hub, a centralized place for players to browse all the news, updates, and events happening in the games they care about.”).

⁷³² Dustin Bailey, “Steam just reached 50,000 total games listed,” *PCGamesN*, February 12, 2021, available at <https://www.pcgamesn.com/steam/total-games>, accessed on April 30, 2024 (“As of this story, 50,046 games are listed on the US Steam store, though that number’s probably already gone up by the time you’re reading this.”).

⁷³³ Steam, “Steam Playtest feature now fully released,” April 21, 2021 available at <https://store.steampowered.com/news/group/4145017/view/3119280855648142183>, accessed on April 30, 2024 (“Steam Playtest is a new feature built right into Steam, allowing you to invite players to test your game without having to manage keys or external mailing lists. You control how many players get access, when to add more players, when to open testing, and when to close your playtest.”); Rory Young, “Valve Introduces Steam Playtest Feature for Early Game Testing,” *GameRant*, November 7, 2020, available at <https://gamerant.com/valve-steam-playtest-feature-november-2020/>, accessed on April 30, 2024 (“Developers will be able to create their own playtest without requiring Steam keys. When ready, developers can activate playtest signups on their game’s profile, and as players sign-up a queue system will be put in place. Developers can add testers from this queue, as well as manually invite testers. The tools will even provide details regarding how many players are already in the test, as well as how many are waiting in queue.”).

⁷³⁴ Mitchell Clark, “Valve will start selling the Steam Deck on February 25th,” *The Verge*, January 26, 2022, available at <https://www.theverge.com/2022/1/26/22902930/valve-steam-deck-release-date-gaming-handheld-pc/>, accessed on April 30, 2024 (“Valve announced that the Steam Deck will go on sale starting February 25th.”); Steam, “Steam Deck Launching February 25th,” January 26, 2022, available at <https://store.steampowered.com/news/app/1675180/view/3117055056380003048>, accessed on April 30, 2024 (“On February 25th, we will be sending out the first batch of order emails to reservation holders. Customers will have 3 days (72 hours) from receipt of their order email to make their purchase, before their reservation is released to the next person in the queue. The first units will be on their way to customers starting the 28th, and we plan to release new order email batches on a weekly cadence.”).

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looking for. Each hub is personalized based on users’ play history, friends network, followed publishers, and wishlist contents.⁷³⁵

61. **October 23, 2022—Milestone:** Steam reaches 30 million users.⁷³⁶

13.2. Backup materials for comparison of Steam and competitor features

13.2.1. Comparison methodology

415. To identify the categories of features presented in Exhibit 14, I conducted internet searches for articles from industry sources that either discuss advice to publishers for distributing their games on PC platforms or review or compare the features available on one or more PC platforms. From reviewing these articles, I identified four categories of features that were commonly mentioned (social and multiplayer features, compatibility features, discovery and marketing features, and customization features). Within each of these categories, I selected features that appear to be representative of the category for comparison across PC platforms.
416. I reviewed platform documentation and performed internet searches to determine whether each feature was available on Steam and competitor PC platforms. For a given platform, if I was able to find evidence from public sources of a feature *ever* being available on the platform, I treated that feature as available in my comparison. Conversely, if I was unable to find evidence of a feature being available on the platform from public sources, I treated that feature as unavailable on the platform in my comparison.
417. In some instances, a clear reading of public sources indicates that features presented in Exhibit 14 that are available on Steam and on a competitor platform are inferior on the competitor platform. I discuss each of these presented in Exhibit 14 that require additional context in turn:⁷³⁷
- a. **Self-Publishing.** Unlike Steam, which allows publishers to list their title on the platform after paying a recoupable \$100 fee through Steam Direct (assuming it does not violate Valve’s content guidelines), publishers on GOG must submit their game

⁷³⁵ Steam, “Personalized Shopping With New Tag, Genre, and Category Pages,” September 7, 2022, available at <https://store.steampowered.com/news/app/593110/view/3091162528094367313>, accessed on April 30, 2024 (“Today’s Steam update brings big updates to the various tag, genre, category, and theme browsing pages across the Steam store. Previously released as a Steam Labs experiment, these new store hubs have been tested and iterated upon with player feedback over the past few months. In fact, you’ve probably already seen these new hubs in action, as we’ve made use of them during the Summer Sale or various official themed sales ... The contents of each hub is personalized based on your play history, network of friends, followed developers, and what you have on your wishlist.”).

⁷³⁶ Jonathan Bolding, “Steam sets new record with 30 million users online at once,” *PC Gamer*, October 23, 2022, available at <https://www.pcgamer.com/steam-sets-new-record-with-30-million-users-online-at-once/>, accessed on April 30, 2024 (“Steam has broken its prior records, and today on Sunday, October 23rd has hit a total of 30,012,957 users online at the same time.”); SteamDB, “Steam,” available at <https://steamdb.info/app/753/charts/>, accessed on April 30, 2024 (“October 2022 ... 30,239,878”).

⁷³⁷ Note that some rows of Exhibit 14 are, in fact, groups of features (e.g., “Friends and chat” includes the Friends List feature, the Text Chat feature, and the Voice Chat feature). For these rows, where one or more features in the group is missing for a competitor platform, I treat that row as inferior. Therefore, I do not discuss those determinations here.

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to GOG for individual review and a decision on whether the game will be published on the platform.⁷³⁸

- b. **Game returns and refunds.** Steam offers returns and refunds for a title within 14 days of purchase so long as the user has played the title for less than two hours.⁷³⁹ However, Origin only offered refunds within seven days of purchase and only if it was within 24 hours of the first time the user launched the game.⁷⁴⁰ Itch.io only offers refunds in instances where a user encounters technical issues with the game or false advertising.⁷⁴¹ Conversely, GOG offers more generous refund terms, allowing refunds within 30 days for any reason.⁷⁴²
- c. **User profile customization.** Steam provides customizable user profile pages that can be made accessible to other users and present additional information such as the games a user owns and plays. Customization features include avatar customization, avatar backgrounds, written user details, profile backgrounds, an achievements list, friends list information, and many other customization options.⁷⁴³ Other platforms listed with *inferior* user profile customization features appear to contain fewer features as described in public sources:

⁷³⁸ Jeffrey Matulef, “Steam Greenlight to be replaced with Steam Direct next week,” *Eurogamer*, June 6, 2017, available at <https://www.eurogamer.net/steam-greenlight-to-be-replaced-with-steam-direct-next-week>, accessed on April 19, 2024 (“After nearly five years Valve’s crowd-voting platform Steam Greenlight is coming to an end, only to be replaced by Steam Direct on 13th June. As previously discussed, Steam Direct will allow any developer to post their game to Valve’s marketplace so long as they pay a \$100 fee per title. This fee can later be recouped once a game reaches \$1k in sales.”); GOG Support, “Releasing your game on GOG | FAQ,” available at <https://support.gog.com/hc/en-us/articles/11382878039197-Releasing-your-game-on-GOG-FAQ?product=gog>, accessed on April 30, 2024 (“Rest assured that we’ll be in touch if we decide to release your game on GOG. However, please keep in mind that if the game does not meet our quality standards and/or includes content not eligible for being published on GOG, we reserve the right to refrain from directly reaching to. We’re committed to providing a human touch throughout the process, which means it may take some time as we carefully review all submissions. We appreciate your understanding and patience as we do our best to give each submission the attention it deserves.”).

⁷³⁹ Carli Velocci, “No More Buyer’s Remorse: How to Return a Steam Game and Get a Refund,” *PCMag*, January 18, 2024, available at <https://www.pcmag.com/how-to/return-refund-game-on-steam>, accessed on April 30, 2024 (“Here’s what to know and how to get your refund ... You need to submit the refund request within 14 days of purchase. Any purchased game can only have two hours of playtime on it”).

⁷⁴⁰ Tyler Wilde, “Origin now offers refunds on EA games within 24 hours of first playing them,” *PC Gamer*, August 20, 2013, available at <https://www.pcgamer.com/ea-origin-refunds/>, accessed on April 30, 2024 (“[I]f you buy an EA game on Origin and decide you don’t like it within 24 hours of first launching it (or seven days after purchase, whichever comes first), EA will offer a full refund.”).

⁷⁴¹ Itch.io, “itch.io Terms of Service,” April 15, 2023, available at <https://itch.io/docs/legal/terms#refunds>, accessed on April 30, 2024 (“Users may request, and [Itch.io] may process, refund requests if the purchased content cannot run, some other issue prevents access to the content, or the product does not accurately represent what was advertised.”).

⁷⁴² GOG Support, “How do I refund a game?” available at <https://support.gog.com/hc/en-us/articles/360011314978-How-do-I-refund-a-game?product=gog>, accessed on April 30, 2024 (“You may request a refund for a product up to 30 days after purchase, even if it was downloaded, launched, and played.”).

⁷⁴³ Joe Keeley, “How to Customize the Design of Your Steam Profile,” *MakeUseOf*, August 19, 2021, available at <https://www.makeuseof.com/how-to-customize-design-steam-profile/>, accessed on May 9, 2024 (“You can set a custom avatar, background, color scheme, and much more ... This is where you can fill out basic information, like your real name, country, and a short biography ... You can also select a profile name ... Use the dropdown and click through the [options] to see what takes your fancy. You can display your favorite games, the rarest achievement, your workshop creations, and more ... You can choose who can view your profile, see your games, friends list, and more ... If you want your Steam profile to look especially fancy, you can buy items from the Community Market and the Steam Points Shop.”).

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- i. Battle.net appears to offer customization features such as avatar customization, written user details, and a summary of games played, but I have not seen evidence that it offers many of the other customization features offered on Steam.⁷⁴⁴
- ii. EA App/Origin appear to offer some user customization features, including avatar customization, profiles that contain a list of games played, friends list information, achievements lists, and a list of the user’s wish-listed games, but I have not seen evidence that it offers many of the other customization features offered on Steam.⁷⁴⁵
- iii. Ubisoft Connect appears to offer some user profile customization features such as avatar selection but I have not seen evidence of many of the other user profile customization features available on Steam.⁷⁴⁶
- d. **Workshop (mods).** Through the Steam Community Workshop, Valve provides a central hub of player-created content (e.g., mods) and tools to publish, organize, and download that content into games.⁷⁴⁷ In my review of publicly available sources, I found evidence that Battle.net once offered a location for users to distribute mods for the title *Warcraft III*.⁷⁴⁸ I have seen no evidence that Battle.net offers this feature for other titles.

13.2.2. Backup materials

1. 23 Dogs in a Trenchcoat, “How do you use controllers with itch.io games?” *Itch.io*, July 30, 2018, available at <https://itch.io/t/267079/how-do-you-use-controllers-with-itchio-games>, accessed on April 30, 2024.
2. AdamKRDG, “Where can I publish my game as the Indie Developer,” *EA Answers HQ*, October 2020, available at <https://answers.ea.com/t5/EA-Services-General-Questions/Where-can-I-publish-my-game-as-the-Indie-Developer/m-p/9598216>, accessed on April 29, 2024.

⁷⁴⁴ Battle.net, “Battle.net Social Settings (Real Name, Profile, and Chat),” available at <https://us.battle.net/support/en/article/313175>, accessed on April 30, 2024 (“You can: Choose an avatar[.] Add something about yourself (max 200 characters)[.] Select which games you play[.] Add a link to your social media site[.]”).

⁷⁴⁵ EA Help, “Access your EA Account data,” April 8, 2024, available at <https://help.ea.com/en/help/account/access-your-ea-account-data/>, accessed on May 9, 2024 (“Your EA Account holds all of your profile information. Your profile information includes: your games[.] your Friend List[.] your achievements[, and] the games you’ve added to your Wishlist ... Click on your avatar in the top right corner.”).

⁷⁴⁶ Ubisoft, “Changing the avatar on your Ubisoft account,” available at <https://www.ubisoft.com/en-gb/help/account/article/changing-the-avatar-on-your-ubisoft-account/000061960>, accessed on April 30, 2024 (“You can customize the profile picture of your Ubisoft account by choosing an avatar from your favourite Ubisoft games”).

⁷⁴⁷ Jeremy Laukkonen, “Everything You Need to Know About Steam Workshop,” *Lifewire*, February 13, 2020, available at <https://www.lifewire.com/everything-you-need-to-know-about-steam-workshop-4587072>, accessed on May 14, 2024 (“The Steam Workshop is a mod repository for Steam Games. When a developer releases a game on Steam, and that game has mod support, they have the option to tie it into the Steam Workshop. Linking to the Steam Workshop allows creators to upload their mods for a massive built-in audience to enjoy, and it provides regular players with a straightforward and streamlined process for obtaining mods.”).

⁷⁴⁸ Battle.net, “Mod Support Website,” available at <http://classic.battle.net/mod/help.shtml>, accessed on April 30, 2024 (“This site was designed to give proper cred it to talented map makers and to support the mod community ... Warcraft III will accept TGA files so there is no conversion needed.”).

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3. Battle.net, “Battle.net Shop Wish List,” available at <https://us.battle.net/support/en/article/194555>, accessed on April 30, 2024.
4. Battle.net, “Battle.net Social Settings (Real Name, Profile, and Chat),” available at <https://us.battle.net/support/en/article/313175>, accessed on April 30, 2024.
5. Battle.net, “Beta Access,” available at <https://us.battle.net/support/en/article/7064>, accessed on May 1, 2024.
6. Battle.net, “Can’t Gift,” available at <https://us.battle.net/support/en/article/12601>, accessed on April 30, 2024.
7. Battle.net, “Input mapping game controls to unsupported controllers,” available at <https://us.battle.net/support/en/article/295163>, accessed on April 30, 2024.
8. Battle.net, “Mod Support Website,” available at <http://classic.battle.net/mod/help.shtml>, accessed on April 30, 2024.
9. Bethesda Support, “Bethesda.net modding guidelines – mods/creations – Skyrim and Fallout 4,” available at <https://help.bethesda.net/#en/answer/51731>, accessed on April 30, 2024.
10. Bethesda Support, “Will friends lists be merged after the Bethesda.net to Steam migration?” available at <https://help.bethesda.net/#en/answer/55116>, accessed on April 30, 2024.
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14. APPENDIX: ADDITIONAL EVIDENCE THAT VALVE DOES NOT EXERCISE MONOPOLY POWER THROUGH AN ANTICOMPETITIVE PRICE PMFN

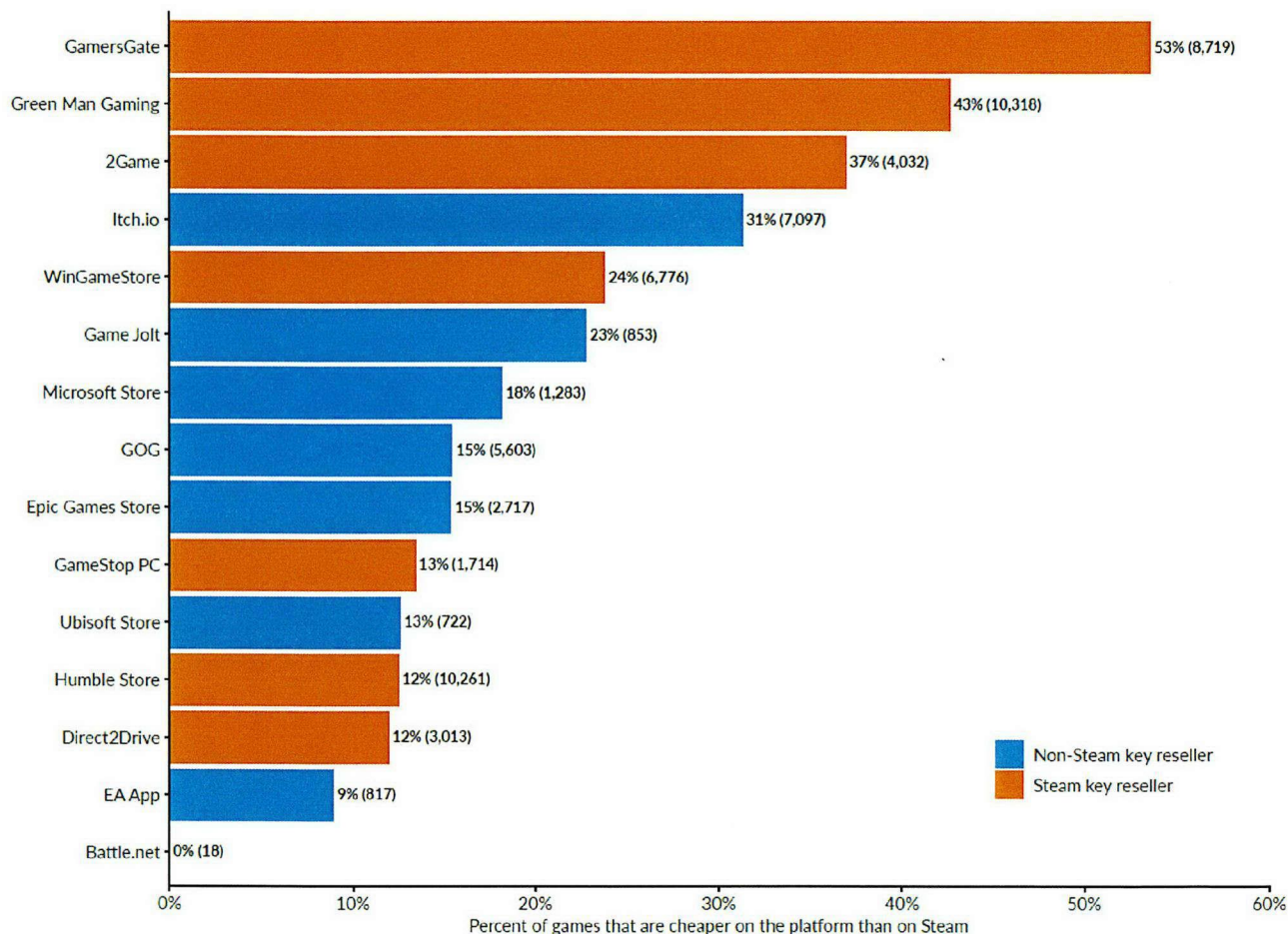
14.1. Sensitivities to analysis comparing prices across platforms

418. My results in Section 7.1.1 are robust to several sensitivities.

419. If I adjust my analysis in Exhibit 19 to examine the minimum price available on each platform, rather than the average price, I obtain similar results, as seen in Exhibit 26 below.

Exhibit 26

Many games are at least 5 percent cheaper outside of Steam – minimum prices



Source: *IsThereAnyDeal*

Note: There are 25,723 distinct games included in this analysis. For any particular game, the minimum prices on Steam and the other platform are calculated as the minimum daily prices over the period when the game is available on both Steam and the other platform. Daily prices on each platform are obtained from the price changes recorded in the ITAD data between the first price change until the last price change recorded. See Appendix Section 18 for details. The number of games included when comparing Steam prices to each other platform is in parentheses next to the bar. The data is filtered through the end of 2022.

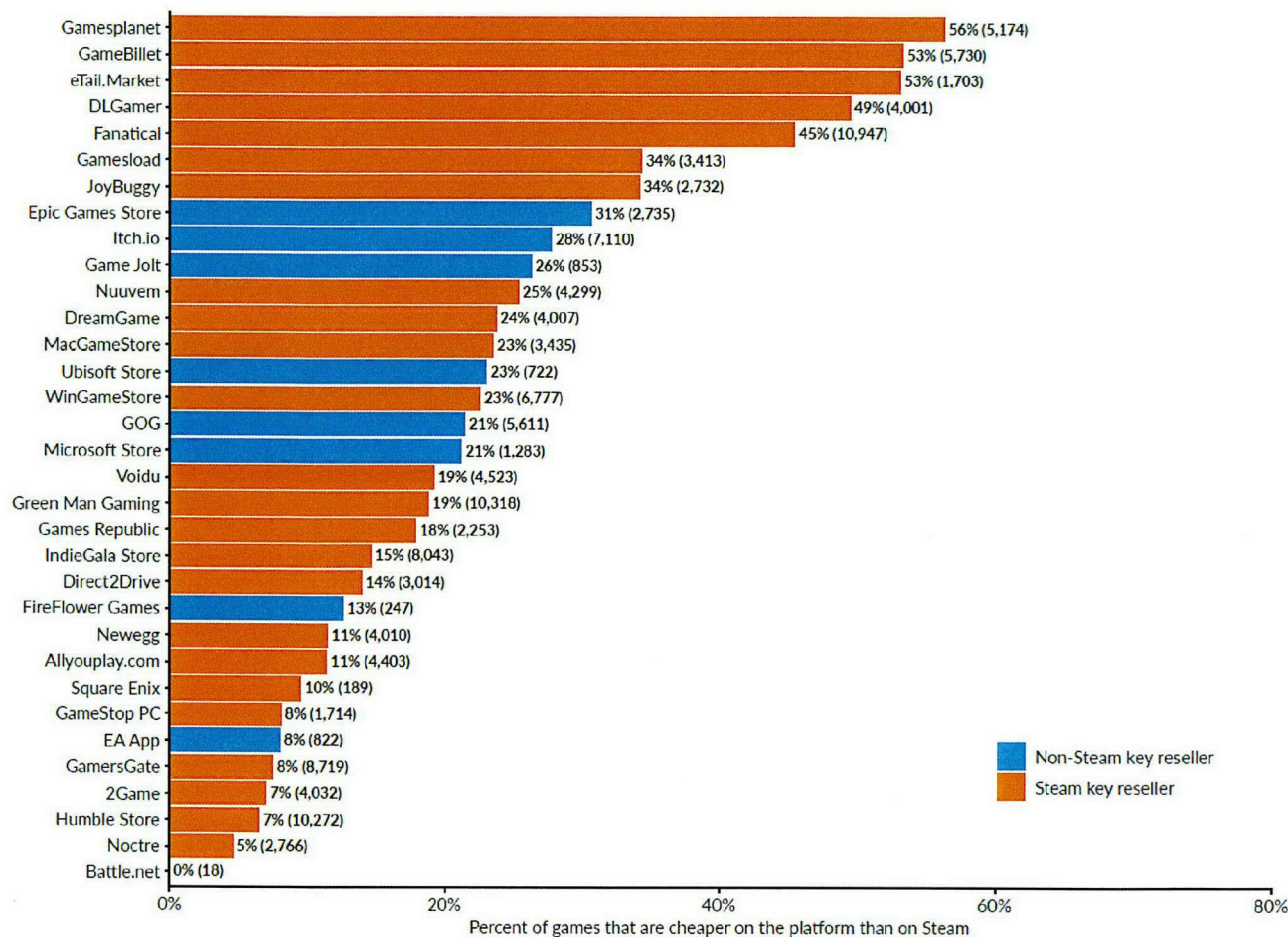
420. If I adjust my analysis in Exhibit 19 to look at all platforms present in the ITAD data, I see a similar distribution of results, with some Steam key resellers selling the majority of

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the games that appear in the ITAD data at an average price at least 5 percent cheaper than the average price on Steam, as shown in Exhibit 27.

Exhibit 27

Many games are at least five percent cheaper outside of Steam – all platforms in the ITAD data



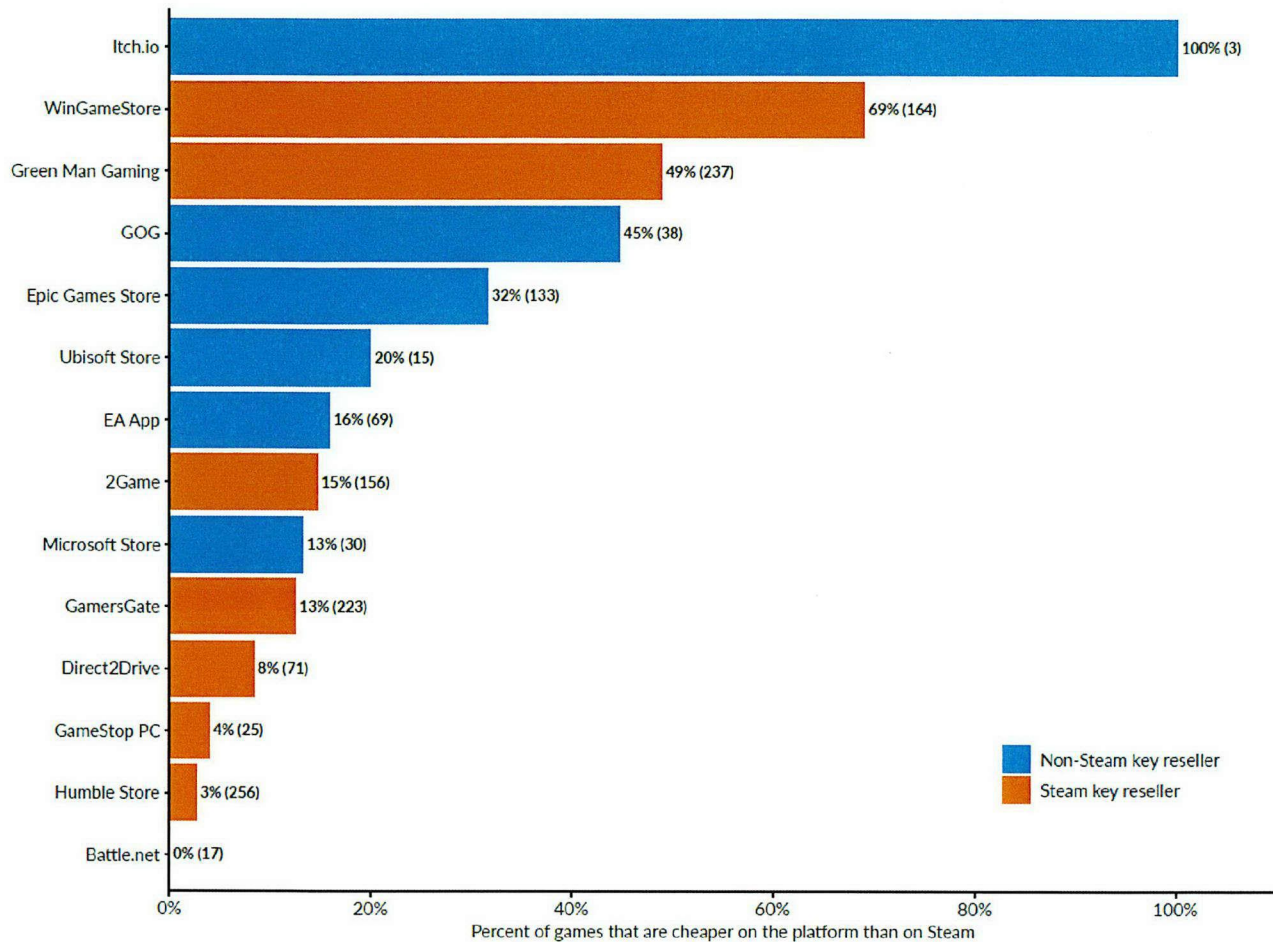
Source: *IsThereAnyDeal*

Note: There are 28,769 distinct games included in this analysis. For any particular game, the average prices on Steam and the other platform are calculated as the average daily prices over the period when the game is available on both Steam and the other platform. Daily prices on each platform are obtained from the price changes recorded in the ITAD data between the first price change until the last price change recorded. See Appendix Section 18 for details. The number of games included when comparing Steam prices to each other platform is in parentheses next to the bar. The data is filtered through the end of 2022.

421. Exhibit 28 below replicates my analysis in Exhibit 19, but only focuses on the top 100 games on Steam by total sales in 2022. To identify the top 100 games, I look at all the packages that correspond to the top 100 primary apps by revenue in the Steam package revenue data.⁷⁴⁹ I match these packages to the ITAD data using the package names after some basic string cleaning. My sample only includes the games that consist of a perfect match between the two datasets using package name; generating a match for every package would require extensive manual review as there is no crosswalk tying the two datasets together.

⁷⁴⁹ See Appendix Section 17.1 for a discussion of this data.

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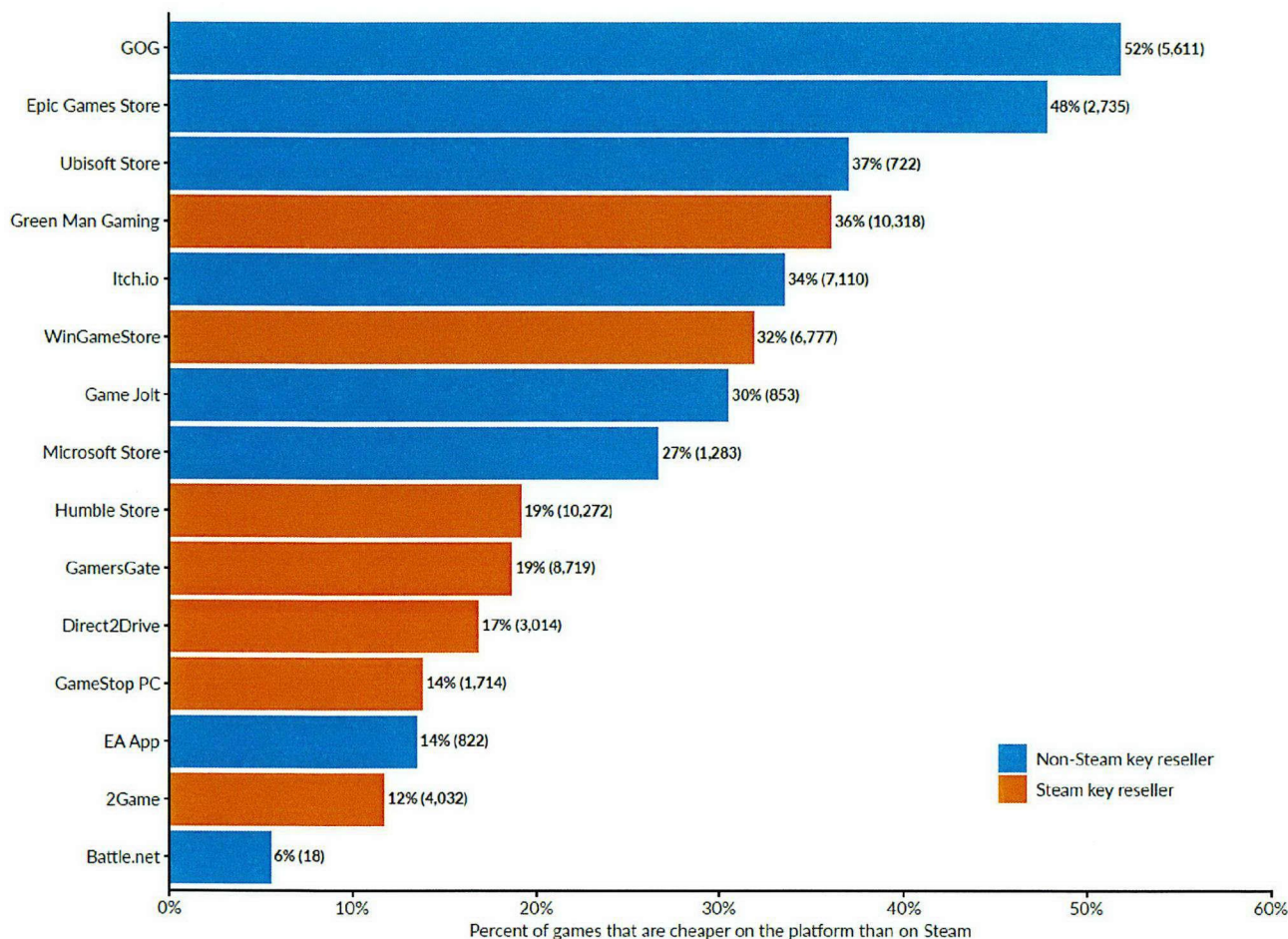
Exhibit 28**Many of the top 100 games on Steam are at least 5 percent cheaper outside of Steam**

Source: Schwartz Report, backup materials; IsThereAnyDeal

Note: I identify all the packages of the top 100 primary apps on Steam by revenue in 2022 using Valve revenue data and merge these onto the data from ITAD using the package name after some basic string cleaning. My sample only contains the games that are a perfect name match between the two datasets after basic string cleaning, as including all the relevant games would require extensive manual review. There are 407 distinct games included in this analysis. For any particular game, the average prices on Steam and the other platform are calculated as the average daily prices over the period when the game is available on both Steam and the other platform. Daily prices on each platform are obtained from the price changes recorded in the ITAD data between the first price change until the last price change recorded. See Appendix Section 18 for details. The number of games included when comparing Steam prices to each other platform is in parentheses next to the bar. GameJolt is not included in this chart because the ITAD data does not include data on prices on GameJolt for any of the games in this sample. The data is filtered through the end of 2022.

422. If I adjust my analysis in Exhibit 19 to instead look at the share of games on each non-Steam platform that have an average price 1 percent cheaper on that corresponding platform than on Steam, I see a higher percentage of lower offers. The results of this can be seen in Exhibit 29 below.

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Exhibit 29**Many games are at least 1 percent cheaper outside of Steam**Source: *IsThereAnyDeal*

Note: There are 25,723 distinct games included in this analysis. For any particular game, the average prices on Steam and the competing store are calculated as the average daily prices over the period when the game is available on both Steam and the competing store. Daily prices in each store are obtained from the price changes recorded in the ITAD data between the first price change until the last price change recorded. See Appendix Section 18 for details. The number of games included when comparing Steam prices to each competing store is in parentheses next to the bar. The data is filtered through the end of 2022.

14.2. Sales events outside of Steam are frequently unmatched on Steam

423. In this appendix section, I demonstrate that (a) many sales events on other platforms are not offered on Steam at all, and (b) sales events on other platforms often offer larger discounts than similarly timed sales events on Steam. This supplements my analysis in Section 7.1.1 by providing another test of whether publishers offer games for lower prices outside of Steam. The evidence in this section further contradicts the existence and class-wide enforcement of an alleged price PMFN.

424. I analyze whether a sales event on a competing platform is “matched” on Steam by looking at (a) whether a sales event occurred on both Steam and the competing platform at the same time, and (b) if a sales event did occur at the same time, whether the publisher offered the same sale price on both platforms.

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425. I find that many sales events on Steam’s competitors did not correspond to a matching sales event on Steam. Publishers often discount their games on platforms other than Steam, and they do not always match those sale prices on Steam. To calculate the percentage of sales events on competing platforms that were not matched on Steam, I identify every time the price of a game went down on a platform besides Steam. I then compare the discounted price to the minimum price on Steam in the 15 days before and after the sales events (31 days overall, including the day of the sales event). I consider publishers as “matching” the sales event on Steam if the minimum price on Steam was equal to or lower than the discounted price on the competing platforms.
426. I report my results in Exhibit 30. I find that more than a fifth of all sales events on competing platforms were not matched on Steam, with the exception of sales events on Battle.net, for which I observe very few sales events. For example, I find that in the 31 days surrounding each sales event:
- 23 percent of sales events on EGS were not matched on Steam.
 - 34 percent of sales events on the Ubisoft Store were not matched on Steam.
 - 40 percent of sales events on GOG were not matched on Steam.
427. These results hold for Steam key resellers as well; for example, nearly 60 percent of sales events on Green Man Gaming were not matched on Steam in the 31 days surrounding each sales event.

Exhibit 30

Many sales events offered on competing platforms are not matched on Steam (15 days before and after)

Store	Key reseller	Number of price drops	Number of price drops not matched on Steam	Percent of price drops not matched on Steam
1. GamersGate	Yes	186,733	121,960	65.3%
2. Green Man Gaming	Yes	140,827	84,699	60.1%
3. WinGameStore	Yes	113,065	49,524	43.8%
4. GameStop PC	Yes	9,524	4,131	43.4%
5. GOG	No	121,322	48,929	40.3%
6. Humble Store	Yes	173,018	67,039	38.7%
7. Itch.io	No	28,985	11,051	38.1%
8. Direct2Drive	Yes	9,048	3,302	36.5%
9. Microsoft Store	No	3,517	1,255	35.7%
10. Ubisoft Store	No	9,532	3,229	33.9%
11. 2Game	Yes	35,677	11,951	33.5%
12. Game Jolt	No	900	299	33.2%
13. EA App	No	5,597	1,790	32.0%
14. Epic Games Store	No	16,293	3,724	22.9%
15. Battle.net	No	4	0	0.0%

Source: *IsThereAnyDeal*

Note: ITAD tracks price changes for popular games across major retail platforms since 2012. This analysis only includes a sample of platforms. Price drops on a platform are included only when the game is also available for sale on Steam 15 days before and after the price drop. I define a price drop as occurring any time that a new sale price appears in the ITAD data that is lower than the previous sale price. Note that resellers do not necessarily sell Steam keys exclusively. For consistency, Origin and Blizzard have been relabeled as EA App and Battle.net in the exhibit. The data is filtered through the end of 2022.

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428. I obtain similar results when I extend my analysis to check for matching sales events in the 61 days surrounding each sales event in Exhibit 31.

Exhibit 31

Many sales events offered on competing platforms are not matched on Steam (30 days before and after)

Store	Key reseller	Number of price drops	Number of price drops not matched on Steam	Percent of price drops not matched on Steam
1. GamersGate	Yes	186,733	104,656	56.0%
2. Green Man Gaming	Yes	140,827	72,175	51.3%
3. WinGameStore	Yes	113,065	36,945	32.7%
4. Itch.io	No	28,985	9,391	32.4%
5. GameStop PC	Yes	9,524	2,485	26.1%
6. Humble Store	Yes	173,018	44,743	25.9%
7. Game Jolt	No	900	227	25.2%
8. GOG	No	121,322	30,445	25.1%
9. Microsoft Store	No	3,517	855	24.3%
10. 2Game	Yes	35,677	7,967	22.3%
11. Direct2Drive	Yes	9,048	1,985	21.9%
12. Ubisoft Store	No	9,532	2,081	21.8%
13. EA App	No	5,597	1,079	19.3%
14. Epic Games Store	No	16,293	2,319	14.2%
15. Battle.net	No	4	0	0.0%

Source: *IsThereAnyDeal*

Note: ITAD tracks price changes for popular games across major retail platforms since 2012. This analysis only includes a sample of platforms. Price drops on a platform are included only when the game is also available for sale on Steam 30 days before and after the price drop. I define a price drop as occurring any time that a new sale price appears in the ITAD data that is lower than the previous sale price. Note that resellers do not necessarily sell Steam keys exclusively. For consistency, Origin and Blizzard have been relabeled as EA App and Battle.net in the exhibit. The data is filtered through the end of 2022.

429. Even when considering a 121-day window around a sales event in Exhibit 32, some sales events available on Steam’s competitors are not matched on Steam. This is likely an underestimate of the percentage of sales events that publishers did not match on Steam. When I examine prices over a 121-day window, I count a sales event as being matched if a similar sales event occurred on Steam as much as two months before or after. Because sales are so frequent (e.g., the average length of time between sales on Steam in the ITAD data is 50 days), it is possible that two sales events that occur two months apart are unrelated.⁷⁵⁰

⁷⁵⁰ Workpaper 59.

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Exhibit 32***Many sales events offered on competing platforms are not matched on Steam (60 days before and after)***

Store	Key reseller	Number of price drops	Number of price drops not matched on Steam	Percent of price drops not matched on Steam
1. GamersGate	Yes	186,733	86,932	46.6%
2. Green Man Gaming	Yes	140,827	58,414	41.5%
3. Itch.io	No	28,985	7,911	27.3%
4. WinGameStore	Yes	113,065	25,905	22.9%
5. Game Jolt	No	900	169	18.8%
6. Microsoft Store	No	3,517	562	16.0%
7. 2Game	Yes	35,677	5,686	15.9%
8. GOG	No	121,322	18,222	15.0%
9. GameStop PC	Yes	9,524	1,225	12.9%
10. Direct2Drive	Yes	9,048	1,134	12.5%
11. EA App	No	5,597	629	11.2%
12. Humble Store	Yes	173,018	19,356	11.2%
13. Ubisoft Store	No	9,532	1,058	11.1%
14. Epic Games Store	No	16,293	1,062	6.5%
15. Battle.net	No	4	0	0.0%

Source: *IsThereAnyDeal*

Note: ITAD tracks price changes for popular games across major retail platforms since 2012. This analysis only includes a sample of platforms. Price drops on a platform are included only when the game is also available for sale on Steam 60 days before and after the price drop. I define a price drop as occurring any time that a new sale price appears in the ITAD data that is lower than the previous sale price. Note that resellers do not necessarily sell Steam keys exclusively. For consistency, Origin and Blizzard have been relabeled as EA App and Battle.net in the exhibit. The data is filtered through the end of 2022.

430. **These results are inconsistent with a systematic price floor driven by Valve’s alleged conduct. Publishers often lower prices on other platforms without matching those discounts on Steam.**
431. **Note that these results are robust to several sensitivities. If I expand my analysis in Exhibit 30 to include all the platforms in the data from ITAD, I see similar ratios across the larger set of platforms, as evidenced in Exhibit 33 below.**

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Exhibit 33

Many sales events offered on competing stores are not matched on Steam (15 days before and after) – all platforms in the ITAD data

Store	Key reseller	Number of price drops	Number of price drops not matched on Steam	Percent of price drops not matched on Steam
1. Gamesplanet	Yes	80,885	56,310	69.6%
2. GamersGate	Yes	186,733	121,960	65.3%
3. Newegg	Yes	19,921	12,469	62.6%
4. Green Man Gaming	Yes	140,827	84,699	60.1%
5. GameBillet	Yes	107,731	56,210	52.2%
6. MacGameStore	Yes	66,193	32,951	49.8%
7. IndieGala Store	Yes	93,752	45,888	48.9%
8. DreamGame	Yes	27,267	12,503	45.9%
9. Fanatical	Yes	542,685	245,472	45.2%
10. WinGameStore	Yes	113,065	49,524	43.8%
11. GameStop PC	Yes	9,524	4,131	43.4%
12. Nuuvem	Yes	85,147	35,290	41.4%
13. Voidu	Yes	50,441	20,808	41.3%
14. eTail.Market	Yes	12,205	5,008	41.0%
15. GOG	No	121,322	48,929	40.3%
16. Games Republic	Yes	7,030	2,826	40.2%
17. Humble Store	Yes	173,018	67,039	38.7%
18. Square Enix	Yes	3,139	1,208	38.5%
19. Itch.io	No	28,985	11,051	38.1%
20. JoyBuggy	Yes	25,054	9,535	38.1%
21. Allyouplay.com	Yes	40,889	15,416	37.7%
22. Noctre	Yes	16,012	6,007	37.5%
23. Direct2Drive	Yes	9,048	3,302	36.5%
24. Microsoft Store	No	3,517	1,255	35.7%
25. FireFlower Games	No	4,339	1,532	35.3%
26. Gamesload	Yes	34,579	12,167	35.2%
27. DLGamer	Yes	37,308	13,009	34.9%
28. Ubisoft Store	No	9,532	3,229	33.9%
29. 2Game	Yes	35,677	11,951	33.5%
30. Game Jolt	No	900	299	33.2%
31. EA App	No	5,597	1,790	32.0%
32. Epic Games Store	No	16,293	3,724	22.9%
33. Battle.net	No	4	0	0.0%

Source: *IsThereAnyDeal*

Note: ITAD tracks price changes for popular games across major retail platforms since 2012. Price drops on a platform are included only when the game is also available for sale on Steam 30 days before and after the price drop. I define a price drop as occurring any time that a new sale price appears in the ITAD data that is lower than the previous sale price. Note that resellers do not necessarily sell Steam keys exclusively. For consistency, Origin and Blizzard have been relabeled as EA App and Battle.net in the exhibit. The data is filtered through the end of 2022.

432. **Exhibit 34 replicates my results from Exhibit 30 examining only the top 100 games on Steam by revenue in 2022.**

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Exhibit 34***Many sales events offered on competing platforms for the top 100 games on Steam are not matched on Steam (15 days before and after)***

Store	Key reseller	Number of price drops	Number of price drops not matched on Steam	Percent of price drops not matched on Steam
1. Itch.io	No	2	2	100.0%
2. Green Man Gaming	Yes	3,788	2,866	75.7%
3. WinGameStore	Yes	5,164	3,566	69.1%
4. GamersGate	Yes	2,366	1,360	57.5%
5. 2Game	Yes	2,121	641	30.2%
6. Ubisoft Store	No	107	30	28.0%
7. EA App	No	457	122	26.7%
8. GOG	No	1,219	318	26.1%
9. Humble Store	Yes	4,187	1,057	25.2%
10. GameStop PC	Yes	81	19	23.5%
11. Microsoft Store	No	153	31	20.3%
12. Direct2Drive	Yes	185	37	20.0%
13. Epic Games Store	No	762	120	15.7%
14. Battle.net	No	2	0	0.0%
15. Game Jolt	No	0	0	0.0%

Source: IsThereAnyDeal

Note: ITAD tracks price changes for popular games across major retail platforms since 2012. This analysis only includes a sample of platforms. I identify all the packages top 100 primary apps on Steam by revenue in 2022 using Valve revenue data and merge these onto the data from ITAD using the package name after basic string cleaning. My sample only contains the games that are a perfect name match between the two datasets, as including all the relevant packages would require extensive manual review. Price drops on a platform are included only when the game is also available for sale on Steam 15 days before and after the price drop. I define a price drop as occurring any time that a new sale price appears in the ITAD data that is lower than the previous sale price. Note that resellers do not necessarily sell Steam keys exclusively. For consistency, Origin and Blizzard have been relabeled as EA App and Battle.net in the exhibit. The data is filtered through the end of 2022.

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15. APPENDIX: [REDACTED] PHYSICAL SALES DATA

433. Where possible, I measure consumer spending outside of Steam using data from Newzoo. [REDACTED]

[REDACTED]

[REDACTED] 751 [REDACTED]

[REDACTED]

[REDACTED] I use this data to analyze the video game industry around Steam’s launch in Section 2.

434. This data contains one observation for each game-by-month-by-platform combination.

[REDACTED]

[REDACTED]

[REDACTED] The data [REDACTED]

[REDACTED]. The data ranges [REDACTED].⁷⁵³

⁷⁵¹ I define “physical sales” as sales of physical products, either in brick-and-mortar stores or online. Under the definition I use, a physical disc bought on Amazon would count as a physical sale, but a Steam key bought at a physical Best Buy location would not.

⁷⁵² [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] See Workpaper 60.

⁷⁵³ Workpaper 60.

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16. APPENDIX: NEWZOO DATA

435. Newzoo is a leading provider of data on video games and video game users. Newzoo uses public research, surveys, and proprietary models to produce its data.⁷⁵⁴ Newzoo data is relied upon by video game developers, publishers, and news companies.⁷⁵⁵ Newzoo data is relied upon by Plaintiffs and Plaintiffs’ experts as well.⁷⁵⁶

436] In this appendix, I describe two types of data published by Newzoo that I use:

a. [REDACTED]

437. I obtained the Newzoo data I use from Newzoo’s website through a subscription. The data on Newzoo’s website changes slightly over time because Newzoo regularly validates and updates its estimates.⁷⁵⁹ For the Newzoo Market Data and Newzoo Game-Level

⁷⁵⁴ The data and annual reports are available to the public through a subscription service. See Newzoo, “About Newzoo,” available at <https://newzoo.com/about>, accessed on April 18, 2024 (“Newzoo is the leader in video games and gamer data. We provide a panoramic view of how and why people engage with games.”); Newzoo, “Games Market Reports and Forecasts Fact Sheet,” available at https://resources.newzoo.com/hubfs/Factsheets/Newzoo_Games_Market_Reports_Forecasts_Factsheet.pdf, accessed on May 3, 2024 (“primary consumer research ... Newzoo’s market models ... analysis of publicly listed company reports, census data, and actuals”).

⁷⁵⁵ Newzoo, “About Newzoo,” available at <https://newzoo.com/about>, accessed on April 18, 2024 (“We are proud to have a client base that, just like the games industry itself, is truly global.”); Newzoo, “Case Study: How Virtuos Uses Newzoo Data to Uncover the Games Market, Find Clients, and Deliver Great Projects,” June 21, 2022, available at <https://newzoo.com/resources/blog/case-study-how-virtuos-uses-newzoo-data-to-uncover-the-games-market>, accessed on April 20, 2024 (“Virtuos is one of the largest video game development companies in the world ... Virtuos’ ability to inform its business with strategic guidance and insights allows it to be a quality service provider. The company relies on Newzoo data as one of its key sources of reliable information.”); Zack Zwiezen, “60 Percent of playtime in 2023 went to 6-year-old or older games, new data shows,” *Kotaku*, April 2, 2024, available at <https://kotaku.com/old-games-2023-playtime-data-fortnite-roblox-minecraft-1851382474>, accessed on May 13, 2024 (“On April 2, Newzoo released its second annual game industry report, including a ton of data and information on what people were playing and spending money on during 2023.”); Kellen Browning, “Crucial time’ for cloud gaming, which wants to change how you play,” *The New York Times*, September 28, 2021, available at <https://www.nytimes.com/2021/07/01/technology/cloud-gaming-latest-wave.html>, accessed on May 6, 2024 (“It has been a busy period for the small but growing cloud gaming industry, which is expected to surpass \$1 billion in revenue and 23 million paying customers by the end of this year, according to Newzoo, a gaming analytics firm.”).

⁷⁵⁶ Schwartz Report, ¶ 103 (“A 2023 report conducted by Newzoo includes survey responses from over 42,000 PC and/or console video game players”); Rietveld Report, ¶ 27 (“Newzoo, a provider of video game industry data and analysis, estimated that there were approximately 3.38 billion video game players worldwide in 2023, with approximately 237 million of those players residing in North America.”); Complaint, ¶¶ 99, 116 (“According to a market researcher, of the 2.6 billion mobile gamers in 2020, about 38% paid for games, and 98% of mobile gaming revenues were from in-game transactions rather than a purchase price ... In the below market summary, the website NewZoo breaks the ‘Global Games Market’ into three categories”). At his deposition, Dr. Schwartz testified that “[Newzoo] is a source that people interested in gaming often rely on ... I understand [Newzoo] is ordinarily relied upon.” See Schwartz Deposition, p. 119.

⁷⁵⁷ [REDACTED]

⁷⁵⁸ [REDACTED]

⁷⁵⁹ Newzoo, “Games Market Reports and Forecasts,” available at <https://newzoo.com/games-market-reports-forecasts>, accessed on December 7, 2023 (“With our system of quarterly updates, including trend reviews, and forecast revisions, you will always have access to the latest market movements.”).

16.1. Newzoo [REDACTED] and Newzoo Market Data

439. In addition to this consumer spending data, the [REDACTED]
[REDACTED] that I use. The [REDACTED] include:

[illegible]

762 [REDACTED]

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a. [REDACTED]
[REDACTED]

■ [REDACTED]

440) [REDACTED]
[REDACTED]
[REDACTED]

441. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

■ [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

■ [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

■ [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

■ [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

763 I use this data as part of my analysis in Workpaper 15. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

764 I use this data in Exhibit 1. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

765 [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

766 [REDACTED]

767 [REDACTED]

768 [REDACTED] [REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

16.2. Newzoo [REDACTED] Data

442. While the [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

443. I use [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

769 [REDACTED].

770 I note that this likely overstates spending on PC multi-game subscriptions (and therefore is a conservative approach for this analysis), since multi-game subscriptions are more common in console gaming than PC gaming. See Statista, "Video game subscription services in the United States – statistics & facts," February 29, 2024, available at <https://www.statista.com/topics/10974/video-gaming-subscription-services/#topicOverview/>, accessed on April 20, 2024 ("Video gaming subscription services have long since been a staple of the online console gaming experience and have increased in popularity across other platforms in recent years.").

771 [REDACTED]

772 I note that this is also a conservative approach, i.e., it leads to an underestimation of spending on PC gaming, [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

773 [REDACTED]
[REDACTED]

774 This data is as of April 30, 2024. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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[REDACTED]

444. I also use [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

445. I use the [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

446. [REDACTED]
■ [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
■ [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

775 [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

776 [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

777 [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

778 I could also have categorized a game on Steam if it had “Steam tags.” [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] See Workpaper 61.

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[REDACTED]

c. In Exhibit 17, I linked games with publishers. [REDACTED]

[REDACTED]

779

[REDACTED]

780 Workpaper 62.

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17. APPENDIX: DATA PRODUCED BY VALVE

17.1. Revenue and payments data

447. My report uses two primary sources of Steam revenue data produced by Valve: revenue generated from purchases of packages and revenue from microtransactions, which Dr. Schwartz refers to as “in-app” or “in-game” transactions data.⁷⁸¹ The compilation of these two data sources is what Dr. Schwartz refers to as “Valve Transaction Data.”⁷⁸² I also rely on payments data produced by Valve and used by Dr. Schwartz. In this appendix, I define terminology for discussing these data and describe how they are processed.

17.1.1. Terminology relevant for understanding data produced by Valve

448. A **package** is “a collection of one or more applications” that “can be sold via Steam or can be granted to users based on the activation of a Steam key. This can be thought of as an SKU or a license.” Each package is identified with a package ID in Valve’s revenue data. After purchasing or activating a package, “the contents of that package dictate which applications ... the user has permission to download and launch.”⁷⁸³ Thus, an **application** can be thought of as the ultimate product that the consumer is purchasing.⁷⁸⁴ Each application or “app” is identified with an app ID in Valve’s revenue data.

449. A Steam package may contain different types of apps, with the most common being playable games and downloadable content.⁷⁸⁵ A **playable game** is a video game, or what would be considered the primary product offered on Steam. **Downloadable content (DLC)** is “additional” content delivered via the game’s properties or “supplemental” content that is a companion to the game.⁷⁸⁶ A package can contain one or multiple applications. For example, the package *The Witcher 3: Wild Hunt* contains a single application, which is the playable game *The Witcher 3: Wild Hunt*. Meanwhile the package *The Witcher 3: Wild Hunt – Complete Edition* contains the playable game as well as 19 additional downloadable content items including alternative looks for in-game characters or “skins,” bonus quests, and in-game items that can be equipped to enhance game play.⁷⁸⁷ As explained in Section 17.1.2, I adopt Dr. Schwartz’s app type

⁷⁸¹ Schwartz Report, ¶ A67 (“The latter, which I refer to as ‘in-app’ or ‘in-game’ data, reflects revenues recorded as in-game transactions.”).

⁷⁸² Schwartz Report, ¶ A63 (“Between March 31, 2023 and April 3, 2023, Valve produced several comma-separated values (CSV) files and spreadsheets in response to Requests for Production Nos. 62, 64-66, and 69-70. As in the associated letters and documentation, I refer to these data and associated tables in subsequent productions collectively as ‘Valve Transaction Data.’”).

⁷⁸³ Steamworks, “Packages,” available at <https://partner.steamgames.com/doc/store/application/packages>, accessed on April 20, 2024.

⁷⁸⁴ Steamworks, “Applications,” available at <https://partner.steamgames.com/doc/store/application>, accessed on May 3, 2024 (“An Application (or App) is the main representation of a product on Steam”).

⁷⁸⁵ Some additional types of apps include software developer kits, hidden apps to configure Steam features, soundtracks, software applications, game demos and guides, beta games, game trailers, and video components. See Workpaper 63.

⁷⁸⁶ Steamworks, “Downloadable Content (DLC),” available at <https://partner.steamgames.com/doc/store/application/dlc>, accessed on April 20, 2024 (“Steam supports both free and paid downloadable content (DLC) that can be registered via CD key or purchased from the Steam store ... Some examples of additional content that could be delivered as DLC include [] in-game content [such as] Expansions[,] New maps or levels[, and] Additional characters ... DLC could be used for supplemental content that does not show up in-game such as Artbooks or wallpapers”).

⁷⁸⁷ Workpaper 64.

450. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED] [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

788 [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

790 Workpaper 64. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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454. As defined in Section 2.1.1 of my report, a **publisher** is an entity that self-distributes or works with third-party distributors to sell video games. These publishers are called “partners” in the context of the revenue data produced by Valve. Each transaction on Steam is connected to one or multiple partners, that is, those who published the game on Steam at the time of the sale.
455. Dr. Schwartz uses the term “**take rate**” to refer to the share of Steam revenues that Valve does not pay to non-Valve publishers.⁷⁹⁴ As explained in Section 2.1.1 of my report, what Dr. Schwartz describes as “effective take rate,” I call “nominal revenue share rate”.

17.1.2. I take Dr. Schwartz’s processing of the revenue and payments data as given

456. The package revenue dataset (VALVE_ANT_0753183) produced by Valve contains records of all packages sold on Steam from March 11, 2004 to December 31, 2022. [REDACTED]
[REDACTED]
[REDACTED].⁷⁹⁵
457. The microtransaction dataset (VALVE_ANT0753418–565) produced by Valve contains records of all in-game purchases made on Steam from September 30, 2010 to December 31, 2022. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
458. Valve produced records of monthly payments (VALVE_ANT_1589687) made by Valve to publishers for the agreed-upon revenue share rate on Steam sales. [REDACTED]
[REDACTED]
[REDACTED]
459. As Dr. Schwartz describes in Appendix B of his report, he appends the package revenue and microtransaction revenue data to create a single revenue data table.⁷⁹⁶ [REDACTED]
[REDACTED]
[REDACTED]⁷⁹⁷ I list those additional data sources in Appendix Section 17.3.4. As discussed in Appendix Section

support for in game purchases, whether that is items, in-game currency, or anything else that you can think up, you can use the Steam Microtransaction APIs to provide customers with more choices.”). See also Section 2.1.3 above.

⁷⁹⁴ Schwartz Report, ¶ A73 (“Calculated_Take_Rate – Commission rate, calculated as $1 - (\text{[REDACTED]} / \text{[REDACTED]})$ ”).

⁷⁹⁵ Pricing information includes details regarding any discounts connected to the sale, the operating system associated with the sale, the currency used in the sale, and prices associated with the package. Two prices are included for each package: (a) base price, the standard cost of purchasing the package; and (b) sale price, the price paid, which could be equal to or less than the base price.

⁷⁹⁶ Schwartz Report, ¶ A68 (“Records from the packages and in-game tables were appended to create one table containing both revenue sources provided.”).

⁷⁹⁷ Schwartz Report, ¶¶ A69 (“[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]”).

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17.1.1, [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]

460. To estimate Valve's take rate, Dr. Schwartz calculates monthly Steam revenue earned using the package revenue and microtransactions data, and monthly payments made using the payments data. For each month, year, primary app, and partner, he estimates the take rate as:⁸⁰⁰

$$\text{Valve's take rate} = 1 - \frac{\text{sum(Payments made)}}{\text{sum(Steam revenues)}}$$

461. I take the Valve revenue data as processed by Dr. Schwartz as given, except for the following adjustments:

- a. I include additional variables from the raw data Dr. Schwartz does not rely on, as well as binary helper variables that I create.
- b. To facilitate mapping between the revenue data and other data produced by Valve in this matter, I append the super package ID field.
- c. For convenience, I create a collapsed version of this data that eliminates partner-level granularity.
- d. Dr. Schwartz does not assign a primary app for approximately 3 percent of sales in the revenue data produced by Valve.⁸⁰¹ To ensure all revenues attributable to proposed class members are included in my analysis, I make the following two adjustments:
 - i. Because Dr. Schwartz does not assign a primary app to all sales, he cannot categorize the app type for all sales. Along with hardware sales he can identify, Dr. Schwartz excludes all sales for which he cannot impute a primary app and app type.⁸⁰² I have reviewed this set of sales and find that none of the applications associated with these packages are categorized as hardware.⁸⁰³ Therefore, I choose to include all sales with an unknown primary app type as assigned by Dr. Schwartz.

⁷⁹⁸ Schwartz Report, ¶ A72 [REDACTED].

⁷⁹⁹ Schwartz Report, Footnote 887 ("Sales associated with hardware products, undetermined product types, or Valve as a publisher are excluded from this aggregation").

⁸⁰⁰ Schwartz Report, ¶ A73 ("Calculated_Take_Rate – Commission rate, calculated as $1 - (\text{[REDACTED]} / \text{[REDACTED]})$.").

⁸⁰¹ Workpaper 66.

⁸⁰² Schwartz Report, Footnote 887 ("Sales associated with hardware products, undetermined product types, or Valve as a publisher are excluded from this aggregation").

⁸⁰³ Workpaper 67.

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- ii. For sales where Dr. Schwartz does not assign a primary app and therefore does not offer a nominal revenue share rate, I conservatively assume a nominal revenue share rate of 30 percent.

17.2. Steam key data

462. Valve produced two datasets related to Steam keys that I rely on for my report. In this appendix, I describe these data and how they are processed.

17.2.1. Steam key redemptions data

463. The Steam key redemptions dataset (VALVE_ANT0753185–416) produced by Valve contains records of all keys redeemed on Steam from September 10, 2003 to December 31, 2022. The dataset contains approximately [REDACTED] observations. Observations in this dataset are grouped by Steam key redemptions [REDACTED]

464. **Dr. Schwartz mishandles the Steam key redemptions data; I do not rely on his work involving Steam keys.** When processing Steam key redemptions, Dr. Schwartz incorrectly quantifies the prevalence of redemptions. I identify the following flaws with his methodology:

- a. Dr. Schwartz only considers key redemptions for packages that have at least one sale on the same day as the redemption. This approach mismeasures the number of Steam keys redeemed for the following reasons:
 - i. Not all redemptions occur on a date when a sale for the same package is made. Any redemptions occurring on a day without sales of the package are unaccounted for, understating redemption prevalence in Dr. Schwartz’s data.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- b. Dr. Schwartz does not limit the Steam keys considered by the type of key redeemed. In the key redemptions data, I observe six types of keys redeemed, most of which are unlikely to have been sold on other platforms.⁸⁰⁴ Dr. Schwartz’s processing of the key redemptions data ignores the difference in properties across key types.
465. Dr. Schwartz’s analysis of Steam keys using his mishandled data is minimal, limited to a calculation of the proportion of publishers who “have utilized” Steam keys.⁸⁰⁵ Given the minimal nature of this analysis, the errors outlined above should not significantly affect

⁸⁰⁴ The Steam key redemptions data contains data on six types of activations, many of which appear to pertain to licenses granted procedurally when users download, for example, free-to-play games or games included as a part of a multi-game subscription service such as EA Play. See Workpaper 68. It is my understanding that keys categorized as “lincese [sic] granted by Valve key, eg. a normal CD-key code activation” are the same types of keys issued to developers through Steam key requests. I refer to these keys as “standard” and limit my analysis to this category of redemptions.

⁸⁰⁵ Schwartz Report, ¶ 158 (“The vast majority of publishers offering games on Steam—[REDACTED] by revenue—have utilized Steam Keys.”).

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his results.⁸⁰⁶ However, the nature of the Steam key redemptions analyses I conduct in my report are such that the errors outlined above would lead to important inaccuracies. I therefore choose to disregard Dr. Schwartz’s processing of the Steam key data and process this data as described below.

466. I exclude Steam key redemptions from my analysis that contain only hardware apps. I also exclude packages that are presumed to be non-revenue-generating, such as demos and betas for developers, which I identified using an extensive string search methodology.⁸⁰⁷
467. The key redemptions data does not contain information on the price at which keys were sold. Two of my approximations of Valve’s effective revenue shares involve imputing prices to Steam key redemptions based on assumptions about the prices at which publishers sold Steam keys. I approximate a price for each key redemption as follows:
- a. For each redemption, I calculate the average sale price of the super package in the country of redemption on the redemption date.
 - b. Key redemptions for a given super package may occur on a date on which there are no associated sales of that super package in the redemption country. In these instances, I estimate the price in wider time bands. I start at the date level and then, as there are no sales for a time band in the country, I calculate the average price at the next level progressing through the following time bands:
 - i. Week.
 - ii. Month.
 - iii. Quarter.
 - iv. Half-year.
 - v. Year.
 - vi. The most recent year prior to the redemption year with positive sales in the relevant country.
 - vii. The year most immediately following the redemption year with positive sales in the relevant country.

⁸⁰⁶ While the oversight described leads to an inaccurate estimation of the total frequency of keys redeemed for a given publisher, it is likely that most publishers with non-zero key redemptions will have at least one package sale on the same day that a redemption occurs. And any publishers with non-standard key redemptions are likely to also have standard key redemptions. Given that Dr. Schwartz makes no attempt to quantify the precise amount of Steam keys redeemed for this analysis, and a publisher needs only a single key redemption to be flagged as a publisher who uses keys, the share of publishers included in this group is unlikely to change significantly because of this oversight.

⁸⁰⁷ I compiled a list of relevant strings (e.g., “alpha,” “beta,” and “demo”) to flag package names that indicate a non-revenue-generating product. I then manually reviewed all matches for these strings to compile a list of false positive strings (e.g., “alpha centauri,” “tubetastic,” and “demon”) that do not indicate a non-revenue-generating package. Using these two lists, I identify and exclude packages likely intended for purposes other than sale to users. See my backup materials for the full collection of non-revenue-generating and false positive strings. It is possible that some keys intended for promotional purposes are not excluded through this methodology while other revenue-generating keys are dropped. Certainty about the intended purpose of a key redemption requires data on publishers’ sales of Steam keys. As explained in Section 4 of my report, publishers do not share that information with Valve, and that information is not available in this matter.

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- c. In rare instances, a key is redeemed in a country where there are no sales of the associated super package in that country.⁸⁰⁸ In such instances, I calculate the average price for that super package in each country in the year of redemption and assign the minimum price across countries. If there are no sales for that super package in the redemption year, then I look to the most recent year with super package sales prior to redemption. If no sales were made in previous years, then I look to the year most immediately following.
- d. Finally, if there are no sales for a super package, then I set the sale price to zero dollars and zero cents (\$0.00).⁸⁰⁹

468. After estimating the price for each redemption based on these assumptions about the prices at which publishers sold Steam keys, I use the publisher-package mapping described in Appendix Section 17.2.3 to identify the publishers associated with each redemption and how any estimated Steam key revenue should be split across these publishers.

17.2.2. Steam key requests data

469. The Steam key requests data (VALVE_ANT0753184) produced by Valve contains records of all Steam keys requested by publishers from January 1, 2013 to December 31, 2022. The data contains approximately [REDACTED] observations. Each observation contains details on an individual request for a quantity of keys associated with a package, [REDACTED]

470. The analyses in my report that use Steam key requests data include all available types of keys requested and issued. The key requests data contains information regarding the publisher's reason for requesting keys, and in some instances additional notes provided by the requesting publisher, only starting in March 5, 2018.⁸¹⁰ When I limit to revenue generating keys issued during the proposed class period, I find that [REDACTED] percent were issued prior to this date.⁸¹¹ For the time period when request reason is available, the majority of revenue generating keys issued were requested to be sold (instead of, for example, those requested for developer beta tests).⁸¹² When I estimate the average Valve effective revenue share in 2022, my results do not materially change whether I use only standard keys issued (those intended to be sold) or include other types (e.g., those intended for developer beta tests).⁸¹³

⁸⁰⁸ I find that [REDACTED] percent of redemptions occur in a country for which there are no sales of the super package. See Workpaper 69.

⁸⁰⁹ I am able to estimate a sale price for all but [REDACTED] percent of super packages. See Workpaper 70.

⁸¹⁰ Workpaper 71.

⁸¹¹ Workpaper 72. I identify keys presumed to be revenue generating through the same methodology I apply to key redemptions described in Footnote 807.

⁸¹² Keys can be requested for distribution on a digital or retail storefront, distribution on a bundle site, a giveaway, a crowdfunding campaign, a press review, a beta test, a crowdfunding reward, or internal development. See VALVE_ANT0753571. I find that of keys issued from March 5, 2018 through December 31, 2022, [REDACTED] percent were requested for distribution through a digital or retail storefront, bundle site, giveaway, or crowdfunding campaign. See Workpaper 73.

⁸¹³ Workpaper 74. I estimate an average 2022 effective revenue share of [REDACTED] percent when including all keys issued regardless of request reason and an average 2022 effective revenue share of [REDACTED] percent when limiting to keys issued for resale.

17.2.3. Publisher-package mapping

816 [REDACTED]
[REDACTED]
817 [REDACTED]
[REDACTED] See Workpaper 77.

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

17.3. Characteristics, usage, and crosswalks

17.3.1. Controller use

474. Included in my production is data from Valve showing controller usage on Steam in 2022 across 110,927 app IDs (steam_controller_usage.xlsx). For each app the data shows:

- a. The total daily active users that launched the app from Steam in 2022.
- b. The total daily active users that launched the app from Steam in 2022 and played using a controller.

17.3.2. Hardware survey

475. Valve produced data in this matter which reports hardware specifications of a collection of Steam users' machines (VALVE_ANT_2972500). From January 1, 2022 to December 31, 2022, Valve surveyed approximately 25 million distinct users, assigning each an anonymized machine ID, and collecting information regarding each machine's VRAM size in megabytes, CPU brand and model, and type of video card.⁸¹⁹ Additionally, Valve

⁸¹⁸ The key requests data does not include [REDACTED] information; therefore, I omit this step for the key requests mapping.

⁸¹⁹ Video Random-Access Memory (VRAM) is used for "graphics rendering" and affects the quality of picture displayed when gaming. Alan Bradley, "What Is VRAM? Why Games Are Using it More, and How to Optimize Your PC," *PCMag*, August 14,

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produced a list of all games owned by a subset of users, covering 97 percent of those who took the survey (VALVE_ANT_2972499).⁸²⁰

17.3.3. Lifetime playtime

476. Included in my production is data from Valve reporting the distribution of average minutes played across users during the lifetime for 160,168 app IDs (steam_lifetime_playtime.csv).⁸²¹ The data is constructed as follows:
- The users for each app ID are sorted by total minutes played since the game release until September 2023 and split into 100 groups (percentiles).
 - Average minutes played across all users in a group is reported.
 - For example, if there are 1,500 users of a game, each group would have 15 users in it. The 15 users in the first group would have played for the least amount of time and the 15 users in the one-hundredth group would have played for the most amount of time. If the first group of 15 users has 5 users that played for 1 minute, 5 users that played for 2 minutes, and 5 users that played for 3 minutes, the reported average playtime would be 2 minutes.⁸²²
 - I find that for some apps the one-hundredth percentile of average user lifetime playtime can exceed a year. These outliers are rare and account for only 2 percent of total user playtime.⁸²³

17.3.4. Crosswalks

477. I received the following crosswalks from Valve that Dr. Schwartz and/or I incorporate when processing the Valve revenue and Steam key data described in Appendix Sections 17.1 and 17.2:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

2023, available at <https://www.pcmag.com/how-to/what-is-vram-why-games-are-using-it-more-and-how-to-optimize-your-pc>, accessed on May 11, 2024 (“VRAM is Video Random-Access Memory, so it’s RAM that is plugged into your GPU (instead of your motherboard) and acts as temporary storage for data related to graphics rendering ... there are three main reasons modern AAA games take up so much VRAM on your PC: 1. Higher Texture Resolution ... 2. Duplicate Textures ... 3. Ray Tracing.”); The Central Processing Unit (CPU) is the “brain” of the computer and is “responsible for carrying out the instructions given to it by the user.” Lenovo, “What is a CPU?” available at <https://www.lenovo.com/us/en/glossary/what-is-cpu/>, accessed on May 11, 2024 (“A CPU (Central Processing Unit) is the primary component of any computer or electronic device. It’s responsible for carrying out the instructions given to it by the user. The CPU acts as the ‘brain’ of the computer — it reads and interprets commands from software programs and uses them to control other components within the machine.”).

⁸²⁰ Workpaper 78.

⁸²¹ Workpaper 79.

⁸²² This is the format of the data in general. For some app IDs, users are not divided evenly across percentiles.

⁸²³ Workpaper 82.

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- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

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18. APPENDIX: ISTHEREANYDEAL (ITAD) DATA

478. Where possible, I rely on the data produced by Valve for information on video game pricing. However, the data produced by Valve have two limitations that prevent me from using it for some of my analyses:
- The data produced by Valve do not include information on daily posted prices for games. Instead, I only observe prices when a consumer makes a purchase on Steam.
 - The data produced by Valve do not contain information on prices from stores besides Steam.
479. For this reason, when comparing daily prices between stores, I rely on an additional data source: the video game pricing aggregator IsThereAnyDeal. In this appendix:
- I describe the process of collecting data from ITAD and the data that I obtain from this process (Section 18.1).
 - I describe the process I follow to validate these data against the data produced by Valve on Steam prices (Section 18.2).
 - I describe how I construct a day-by-store-by-game panel of prices (Section 18.3).
 - I discuss additional data on bundles that I collected from ITAD (Section 18.4).

18.1. Description of game price data

480. ITAD maintains a log table containing information on pricing for each game for which it tracks prices. ITAD monitors prices on a set of PC platforms and, when it detects a new price for a game on a given store, it updates this log table with a new row. An example of one of these log tables is in Exhibit 35.

Exhibit 35*ITAD log table for Cyberpunk 2077*

Log								
2023-12-05 19:19	1 day	Steam	regular	\$59.99	-	actual	50%	\$29.99 -50%
2023-12-05 12:18	1 day	GOG ♥	regular	\$59.99	-	actual	50%	\$29.99 -50%
2023-11-29 00:12	6 days	GOG ♥	regular	\$59.99	-	actual	0%	\$59.99 +100%
2023-11-28 21:07	6 days	Steam	regular	\$59.99	-	actual	0%	\$59.99 +100%
2023-11-28 19:11	6 days	Humble Store	regular	\$59.99	-	actual	0%	\$59.99 +100%
2023-11-28 16:18	6 days	Epic Game Store ♥	regular	\$59.99	-	actual	0%	\$59.99 +100%
2023-11-21 20:59	6 days	Steam	regular	\$59.99	-	actual	50%	\$29.99 -50%
2023-11-21 16:42	6 days	Epic Game Store ♥	regular	\$59.99	-	actual	50%	\$29.99 -50%
2023-11-21 14:02	7 days	GOG ♥	regular	\$59.99	-	actual	50%	\$29.99 -50%
2023-11-17 19:11	10 days	Humble Store	regular	\$59.99	-	actual	50%	\$29.99 -50%

Source: IsThereAnyDeal, "Price History - Cyberpunk 2077," available at <https://isthereanydeal.com/game/cyberpunk-2077/history/>, accessed on December 5, 2023.

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481. I collected data from these log tables for 171,012 games.⁸²⁴ I collected data from the ITAD log tables on two dates: July 5, 2023 (“July data”) and October 2, 2023 (“October data”). I collected data on multiple dates because, on any given day, the pages on ITAD for a set of games will be down. Therefore, collecting data on multiple days increases the coverage of games in my sample. To combine these two datasets, I started with all the observations from the October data. I then supplemented the October data with games in the July data that did not appear in the October data. After consolidating the October data and July data into a single dataset, I filtered the data to only include price changes in or before June 2023.⁸²⁵ This restriction ensures that observations of games from the July data and the October data cover the same period.
482. The resulting dataset contains the following fields that I use in my analysis: the date of the price change, the store that the price change occurred on, the regular (or “base”) price of the game, and the actual (or “sale”) price of the game. Data are at the game-by-store-by-price-change level and contain 11,341,345 observations.⁸²⁶ I collected data on U.S. prices denominated in U.S. dollars.
483. The raw data contains pricing information for 38 PC platforms.⁸²⁷ The platforms are 2Game, AllYouPlay, Battle.net, Direct2Drive, DLGamer, Dreamgame, EA App (Origin), Epic Games Store, eTail.Market, Fanatical, FireFlower, Game Jolt, GameBillet, GamersGate, Gamesload, GamesPlanet DE, GamesPlanet FR, GamesPlanet UK, GamesPlanet US, GamesRepublic, GameStop PC, GOG, Green Man Gaming, Humble Store, Humble Widgets, IndieGala Store, itch.io, JoyBuggy, MacGameStore, Microsoft Store, Newegg, Noctre, Nuuvem, Square Enix, Steam, Ubisoft Store, Voidu, and WinGameStore.
484. I drop observations of the following platforms from my analysis: GamesPlanet DE, GamesPlanet FR, and GamesPlanet UK. I do not consider these platforms because they only operate in their respective countries, and my analyses that rely on ITAD data focus on U.S. prices. I also drop observations from Humble Widgets, which does not sell games.⁸²⁸
485. Of the remaining platforms, 10 are PC software platforms and 24 are PC storefronts.⁸²⁹

⁸²⁴ Workpaper 80.

⁸²⁵ Note that, while the data covers a longer period, I restrict my analyses to use data from December 31, 2022 and before. This is because the data produced by Valve end on December 31, 2022.

⁸²⁶ Workpaper 80.

⁸²⁷ Workpaper 80.

⁸²⁸ Humble Widgets are payment processing tools for self-distribution of games. See Humble Widgets, “The best way to sell your game from your website,” available at <https://www.humblebundle.com/developer/widget>, accessed on May 8, 2024 (“The best way to sell your game from your website ... I highly recommend the Humble widget for anybody looking to process payments on their own website.”).

⁸²⁹ The PC software platforms are Steam, itch.io, Indie Gala, MacGameStore, the EA App, GOG, Microsoft Store, EGS, Ubisoft, and Battle.net. The PC Storefronts are Green Man Gaming, GameBillet, Fanatical, Nuuvem, Humble Store, GamersGate, WinGameStore, Newegg, FireFlower, DLGamer, JoyBuggy, Gamesload, DreamGame, Voidu, AllYouPlay, Games Republic, eTail.Market, Gamesplanet US, 2Game, Direct2Drive, Noctre, GameStop PC, Square Enix, and Game Jolt. Steam key resellers include Gamesplanet US, GamersGate, Newegg, Green Man Gaming, GameBillet, MacGameStore, IndiGala Store, DreamGame, Fanatical, WinGameStore, GameStop PC, Nuuvem, Voidu, eTail.Market, Games Republic, Humble Store, Square Enix, JoyBuggy, AllYouPlay, Noctre, Direct2Drive, GamesLoad, DLGamer, and 2Game. See 2Game, “How do I activate this so-called key?” August 4, 2023, available at <https://2game.zendesk.com/hc/en-us/articles/360007563551-How-do-I-activate-this-so-called-key>, accessed on May 15, 2024 (“Choose ‘Activate a Product on Steam...’”); AllYouPlay, “FAQ – Activation Guides,”

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486. With one exception, this analysis only compares prices between different platforms for PC games. The exception is that the Humble Store also sells games for the Nintendo Switch console.⁸³⁰ I do not filter out Switch games on Humble because there is no systematic way to identify these titles without extensive manual review. Excluding the Humble Store does not materially change any of my results.⁸³¹
487. Note that this data only contains information on prices for a limited list of stores, not the whole industry. In particular, it does not contain information on all first-party websites. The data also only contains information on listed prices, rather than transacted prices. Consequently, it does not reflect the revenue generated by a game or the amount that a publisher received from a sale. The data also does not indicate whether the game is being sold as a Steam key, as an activation key for another platform (e.g., an Origin key), or as a direct download.

available at <https://www.allyouplay.com/topic/Frequently%20Asked%20Questions?id=27>, accessed on May 15, 2024 (“To redeem your Steam key and add a new game to your Steam library, just follow these simple steps.”); Direct2Drive, “General Guide to Using the Steam Client,” August 31, 2019, available at <https://atgameshelp.freshdesk.com/support/solutions/articles/48000852333-general-guide-to-using-the-steam-client>, accessed on May 15, 2024 (“The following guides are meant to assist you with downloading and installing a Steam Key title purchased on Direct2Drive.”); DLGamer, “Elden Ring,” available at <https://www.dlgamer.com/us/games/buy-elden-ring-84810>, accessed on May 15, 2024 (“Activation key must be used on a valid Steam account.”); DreamGame, “Dungeon Lords Steam Edition,” available at <https://www.dreamgame.com/en/dungeon-lords-steam-edition-2>, accessed on May 15, 2024 (“DRM: Steam”); eTail.Market, “PC Games – Buy Steam, Epic Games Digital Game Codes,” available at <https://etail.market/pc-games>, accessed on May 15, 2024; Fanatical, “Top 10 FAQs,” October 5, 2017, available at <https://support.fanatical.com/hc/en-us/articles/115005282769-Top-10-FAQs>, accessed on May 15, 2024 (“I get the message ‘Duplicate Key’ when redeeming a key on Steam.”); GameBillet, “Redeeming Your Steam Keys,” available at <https://www.gamebillet.com/redeeming-your-steam-keys>, accessed on May 15, 2024; GamersGate, “Steam code activation,” available at <https://www.gamersgate.com/en-us/support/activations/steam/>, accessed on May 15, 2024; Games Republic, “Dark Souls III Steam Key,” available at <https://gamesrepublic.com/dark-souls-iii-pc-digital>, accessed on May 15, 2024; GamesLoad, “Chivalry 2 Special Edition Content – DLC (Steam),” available at <https://www.gamesload.com/games/action/chivalry-2-special-edition-content-dlc-steam-866538.html>, accessed on May 15, 2024 (“Activation key must be used on a valid Steam account.”); GameStop, “Occupy Mars: The Game – PC Steam,” available at <https://www.gamestop.com/pc-gaming/pc-games/products/occupy-mars-the-game---pc-steam/406962.html>, accessed on May 15, 2024; Gamesplanet, “Men of War II,” available at <https://us.gamesplanet.com/game/men-of-war-ii-steam-key--5423-1>, accessed on May 15, 2024 (“Delivery: Steam Key”); Karl, “DRM – Steam,” *Green Man Gaming*, March 12, 2013, available at <https://greenmangaming.zendesk.com/hc/en-us/articles/215465228-DRM-Steam>, accessed on May 15, 2024; Humble Support, “How To Redeem Steam Keys,” available at <https://support.humblebundle.com/hc/en-us/articles/204008710-How-To-Redeem-Steam-Keys>, accessed on December 7, 2023; IndieGala, “Buy Now,” available at <https://company.indiegala.com/>, accessed on May 15, 2024 (“Indiegala – PC game sales, Free Steam keys, giveaways, and more!”); JoyBuggy, “How to Redeem a game on Steam,” available at <https://www.joybuggy.com/en/steam>, accessed on May 15, 2024; MacGameStore, “Activating a game on Steam,” August 23, 2019, available at <https://macgamestore.zendesk.com/hc/en-us/articles/360034301954-Activating-a-game-on-Steam>, accessed on May 15, 2024; Newegg, “HELLDIVERS 2 – PC [Steam Online Game Code],” available at <https://www.newegg.com/playstation-pc-llc-helldivers-2-pre-purchase/p/N82E16832886148>, accessed on May 15, 2024; Nuuvem, “Redeem key Game,” available at <https://www.nuuvem.com/us-en/activation-by-key>, accessed on May 15, 2024 (“Firts [sic], it must be inserted in the respective game activation platform (Steam, Ubisoft Connect, Battle.Net, etc) before you can download your game.”); Noctre, “Steam Games,” available at <https://www.noctre.com/platforms/steam>, accessed on May 15, 2024; Square Enix, “[Steam] How do I register the code for the Complete Edition,” available at <https://support.na.square-enix.com/faqarticle.php?id=5382&la=1&id=81176&ret=faq>, accessed on May 15, 2024; Voidu, “How do I activate my key on STEAM?” July 7, 2021, available at <https://voiducom.zendesk.com/hc/en-us/articles/360013804954-How-do-I-activate-my-key-on-STEAM>, accessed on May 15, 2024; WinGameStore, “For The King – Adventurer’s Pack (3 keys),” available at <https://www.wingamestore.com/product/8893/For-The-King-Adventurers-Pack-3-keys/>, accessed on May 15, 2024 (“To be absolutely clear: This is a single purchase for *THREE Steam Keys* of ‘For The King’”).

⁸³⁰ Humble Bundle, “Games for Nintendo Switch,” available at <https://www.humblebundle.com/store/c/switch>, accessed on May 8, 2024.

⁸³¹ Removing the comparison of Steam prices and Humble prices from Exhibit 19, Exhibit 30, and the sensitivities to those analyses presented in Appendix Sections 14.1 and 14.2 does not affect the interpretation of these exhibits. Many games have lower average prices on competing stores than on Steam, and many sales on competing platforms are not matched on Steam.

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18.2. Data validation

488. ITAD collects pricing data directly from stores' websites. To validate this data collection process, I compared prices in the Valve package revenue data to Steam prices in the ITAD data for the top 100 games by revenue.⁸³² To do this, I merged observations from the ITAD data to the Valve package revenue data by game title and date. There are 33,199 observations where I observe a game-by-date combination in both the ITAD data and the Valve package revenue data.⁸³³
489. When comparing these datasets, I consider an observation a match if there is an observation in the Valve package revenue data where both the sale price and the base price are equal to the sale price and the base price for the observation in the ITAD data (to the nearest cent). I find that 27,662 observations in this ITAD sample match prices in the Valve package revenue data.⁸³⁴ This is a conservative measure of the ITAD data's accuracy; the absence of a price observation on a specific day in the Valve package revenue data does not indicate that the game was not available on Steam for that price on that day; it instead indicates that no consumers purchased it at that price on Steam on that day.
490. The observations that are unmatched are not necessarily errors. Among the remaining 5,537 observations where the price in the ITAD data does not match the price in the Valve package revenue data for that day, I find that the price in the Valve package revenue data agrees with the previous reported price change for that same game in the ITAD data for an additional 2,728 observations.⁸³⁵ This suggests that the purchases made on Steam on that day all occurred before the price change reported in the ITAD data.
491. When I consider both the 27,662 observations where the ITAD price and Valve package revenue price agree for that day, and the 2,728 observations where the Valve package revenue data agrees with the previous observation in the ITAD data as matches, I obtain a match rate of 92 percent.⁸³⁶

18.3. Construction of daily game price panel dataset

492. My analyses compare prices between stores. The data I collected from ITAD is at the game-by-store-by-price-change level and has observations every time the price changes. However, my analysis requires a dataset that is at the game-by-store-by-day level and that has observations for every day, not just days where the price changed. To construct this dataset:

⁸³² Note that I restrict this analysis to the top 100 games because there is no crosswalk between the data produced by Valve and ITAD data. Instead, I match these datasets by game title and keep the subset of these games that contain a match between a package description in the Valve package revenue data and a game name in the ITAD data, after some string cleaning. I calculate the top 100 games by aggregating revenues by primary app ID for the year 2022, filtering to the primary apps with the 100 largest revenues and keeping all packages corresponding to those primary apps that had U.S. sales transacted in U.S. dollars. After applying these filters, I obtain a sample of 97 primary apps and 2,071 packages. I match 1,326 of these packages to games in the ITAD data. Of the 97 primary apps, 93 have at least one package in the sample.

⁸³³ Workpaper 80.

⁸³⁴ Workpaper 80.

⁸³⁵ Workpaper 80.

⁸³⁶ Workpaper 80.

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- a. I first construct a dataset that is unique at the game-by-store-by-day level by keeping the price change with the lowest reported price for all observations on Steam on each day and keeping the price change with the highest reported price for all other stores on each day.
- b. After I have a dataset with only one price for each day, I fill in prices for all days on which there is no price change as reported by ITAD. To do this, I assume that the price on a given day is the same as the price corresponding to the previous ITAD reported price change, and that this price does not change until the next price change reported by ITAD.
- c. I obtain daily prices in each store from the price changes recorded in the ITAD data between the first price change until the last price change recorded for that game-by-store combination. When comparing prices between stores, I restrict my analysis to the day-by-game combinations where both stores have reported prices in the data for that day for that game.

18.4. Bundle data

493. In addition to prices on individual games, I also collected data from ITAD on the prices of a sample of bundles. For each bundle, ITAD maintains data on the games included in each bundle, the name of each bundle, the price of the lowest tier of each bundle, the number of tiers in that bundle, and the date that each bundle ended. I collected data from this log table for 6,547 bundles.⁸³⁷ This data is unique at the bundle level (i.e., the data contains one observation per bundle).
494. Of these bundles, 2,205 feature multiple tiers.⁸³⁸ In a bundle with multiple tiers, consumers can buy a subset of the games in the bundle for one price, then can add additional games to the bundle for an additional fee. ITAD data only contains information on the pricing for the lowest tier of each bundle, so I restrict my analysis to the 4,342 bundles with a single tier.⁸³⁹
495. My analyses of this data compare prices for bundles to the prices of games on Steam. To do this, I merged data from the ITAD pricing data described above with the bundle data for each game. Information on the length of time that each bundle was offered is not maintained by ITAD, so I measure Steam price during the duration of the bundle with the minimum price that a game was available for on Steam in the 30 days before the day the bundle expired. The resulting dataset is at the game-by-bundle level.

⁸³⁷ Workpaper 81.

⁸³⁸ Workpaper 81.

⁸³⁹ Workpaper 81.

LESLEY CHIOU

Occidental College
Department of Economics
1600 Campus Road
Los Angeles, CA 90041

Office Phone: (323) 259-2875
Office Fax: (323) 259-2704
lchiou at oxy dot edu
<http://www.oxy.edu/faculty/lesley-chiou>

EDUCATION

Ph.D. Economics, Massachusetts Institute of Technology, 2005.

B.A. in Mathematics and Economics with Highest Honors, University of California, Berkeley, 2000.

FIELDS

Industrial Organization and Applied Econometrics

POSITIONS

Laurence de Rycke Professor of Economics, Occidental College, 2022-

Professor, Occidental College, 2018-

Associate Professor, Occidental College, 2011-2018

Visiting Scholar, University of California, Los Angeles, Department of Economics, Spring 2013

Visiting Scholar, Boston University, Department of Economics, Fall 2012

Assistant Professor, Occidental College, 2005-2011

AWARDS, FELLOWSHIPS, AND GRANTS

2016-	Schwartz Scholar Summer Research Award, Occidental College
2014	Faculty Research Grant, Occidental College
2012	MacArthur International Grant, Occidental College
2011	National Bureau of Economic Research (NBER) Grant, Economics of Digitization
2011	Networks, Electronic Commerce, and Telecommunications (NET) Institute Grant
2009	Paul Geroski Best Paper Award, International Journal of Industrial Organization
2009	Faculty Research Grant, Occidental College
2006-2015	Robinson Scholar Summer Research Award, Occidental College
2004	George P. Shultz Fund Award, Massachusetts Institute of Technology
2000-2004	National Science Foundation Graduate Fellowship
2000	Steve M. Goldman Memorial Prize and Departmental Citation, Department of Economics, UC Berkeley
2000	Percy Lionel Davis Award for Excellence in Scholarship, Department of Mathematics, UC Berkeley

PUBLISHED AND FORTHCOMING PAPERS

- “How Do Restrictions on Advertising Affect Consumer Search?” with Catherine Tucker, *Management Science*, Vol. 68, pp. 866-882, 2021.
- “Search Engines and Data Retention: Implications for Privacy and Antitrust” with Catherine Tucker, *Competition Policy International*, Chapter in *The Evolution of Antitrust in the Digital Era: Essays on Competition Policy*, Vol. 2, 2021.
- “Internet Use, Competition, and Geographical Rescoping in Yellow Pages Advertising” with E. Nilay Kafali and Marc Rysman, *Information Economics and Policy*, Vol. 52, 2020.
- “Trust, Reputation, and Bidding Behavior in Online Mystery Auctions” with Jennifer Pate, *Applied Economics Letters*, Vol. 25, pp. 702-706, 2018.
- “Vertical Integration and Antitrust in Search Markets,” *Journal of Law, Economics, and Organization*, Vol. 33, pp. 653-685, 2017.
- “Content Aggregation by Platforms: The Case of the News Media” with Catherine Tucker, *Journal of Economics and Management Strategy*, Vol. 26, pp. 782-805, 2017. (Earlier versions of this paper was circulated under the titles “Copyright, Digitization, and Aggregation” and “News and Online Aggregators.”)
- “Consumer Response to Tax Changes” with Erich Muehlegger, *National Tax Journal*, Vol. 67, pp. 621-650, 2014.
- “Paywalls and the Demand for Online News” with Catherine Tucker, *Information Economics and Policy*, Vol. 25, pp. 61-69, 2013.
- “How Does the Use of Trademarks by Third-Party Sellers Affect Online Search?” with Catherine Tucker, *Marketing Science*, Vol. 31, pp. 819-837, 2012.
- “The Effect of Ticket Resale Laws on Consumption and Production in Performing Arts Markets” with Melissa Boyle, *Eastern Economic Journal*, Vol. 38, pp. 210-222, 2012.
- “The Reality of Reality Television: Does Reality TV Influence Local Crime Rates?” with Mary Lopez, *Economics Letters*, Vol. 108, pp. 330-333, 2010.
- “Internet Auctions and Frictionless Commerce: Evidence from the Retail Gift Card Market” with Jennifer Pate, *Review of Industrial Organization*, Vol. 36, pp. 295-304, 2010.
- “Empirical Analysis of Competition between Wal-Mart and Other Retail Channels,” *Journal of Economics and Management Strategy*, Vol. 18, pp. 285-322, 2009. (Lead article)
- “Broadway Productions and the Value of a Tony Award” with Melissa Boyle, *Journal of Cultural Economics*, Vol. 33, pp. 49-68, 2009.
- “Crossing the Line: Direct Estimation of Cross-Border Cigarette Sales and the Effect on Tax Revenue” with Erich Muehlegger, *The B.E. Journal of Economic Analysis and Policy (Contributions)*, Vol. 8, Article 48, 2008.

- “The Timing of Movie Releases: Evidence from the Home Video Industry,” *International Journal of Industrial Organization*, Vol. 26, pp. 1059-1073, 2008. (Winner of journal’s Paul Geroski Best Paper Award)
 - “Identification and Estimation of Mixed Logit Models under Simulation Methods” with Joan L. Walker, *Journal of Econometrics*, Vol. 141, pp. 683-703, 2007.
 - Reprinted in *Choice Modeling: Foundational Contributions*, edited by D.A. Hensher and J.M. Rose, 2011.
-

PAPERS UNDER REVIEW

- “Social Distancing, Internet Access, and Inequality” with Catherine Tucker, *NBER Working Paper No.* 26982.
 - “Fake News and Advertising on Social Media: A Study of the Anti-Vaccination Movement” with Catherine Tucker, *NBER Working Paper No.* 25223.
-

WORKS IN PROGRESS

- “Algorithms and Online News” with Catherine Tucker
 - “Friend or Foe? Social Media and the Sharing of News” with Nico Neumann and Catherine Tucker
 - “Entry and Liberalization of the Airline Industry” with Yang Li and Marc Rysman
-

OTHER WRITING

- “Comment on the January 2022 DOJ and FTC RFI on Merger Enforcement: Issues Related to Digital Markets” with Nathaniel Hipsman, Jeffrey Prince, and Sachin Sancheti, 2022.
 - “Free Can Make Cents” with Avigail Kifer, American Bar Association: Pricing Conduct Committee Newsletter of Antitrust Law, 2022. (Winner of Concurrences Review’s 2022 Antitrust Writing Awards for Digital Business Articles.)
 - “Introductory Microeconomics and One Big Firm” with Santhi Hejeebu
-

PROFESSIONAL ACTIVITIES

Invited Seminars and Presentations (last 10 years)

1. 2022, Federal Communications Commission (FCC), Economics Seminar
2. 2021, University of Maryland, Department of Economics
3. 2021, American Bar Association, Panel on Tech Platforms
4. 2020, International Competition Network (ICN) Annual Conference, invited by Federal Trade Commission (FTC) and Department of Justice Antitrust Division
5. 2018, Federal Trade Commission (FTC), Public Hearing on Competition and Consumer Protection in the 21st Century

6. 2018, Federal Communications Commission (FCC), Economics Seminar
7. 2016, International Industrial Organization Conference
8. 2016 University of California, Davis, Department of Economics
9. 2016 Seventh Annual Searle Conference on Internet Search and Innovation, Northwestern School of Law (discussant)
10. 2016 National Bureau of Economics Research (NBER) Digitization Meeting
11. 2013, University of California, Los Angeles, Department of Economics
12. 2013 Loyola Marymount University, Department of Economics
13. 2012, National Bureau of Economics Research (NBER) Digitization Meeting
14. 2012, International Industrial Organization Conference
15. 2012, NET Institute Conference on Network Economics
16. 2012, European Association for Research in Industrial Economics (EARIE) Annual Conference
17. 2012, Brandeis University, Department of Economics
18. 2012, Wellesley College, Department of Economics
19. 2012, Boston University, Department of Economics
20. 2011, International Industrial Organization Conference
21. 2011, Claremont McKenna College, Department of Economics
22. 2011, Drexel University, LeBow College of Business
23. 2011, Western Economic Association International Conference
24. 2011, Southern Economic Association Annual Meeting
25. 2011, Sixth bi-annual Conference on The Economics of Intellectual Property, Software, and the Internet (co-author presented), Toulouse School of Economics, France

Reviewer

American Economic Journal: Microeconomics, The B.E. Journal of Economic Analysis and Policy, Contemporary Economic Policy, Economic Inquiry, International Journal of Industrial Organization, Information Economics and Policy, Journal of Applied Econometrics, Journal of Economics and Management Strategy, Journal of Industrial Economics, Journal of Policy Analysis and Management, Journal of Political Economy, Journal of Public Economics, Management Science, National Science Foundation, National Tax Journal, Public Finance Review, RAND Journal of Economics, Review of Economics and Statistics

TEACHING

Course Evaluations

- Principles of Economics
Spring 2019, Section 1, Course Average 6.7 (scale of 1 to 7)
- Intermediate Microeconomic Theory
Fall 2009, Section 1, Course Average 6.4 (scale of 1 to 7)
Fall 2009, Section 2, Course Average 6.7 (scale of 1 to 7)
- Econometrics
Spring 2014, Section 1, Course Average 6.6 (scale of 1 to 7)

Spring 2014, Section 2, Course Average 6.9 (scale of 1 to 7)

- Industrial Organization

Spring 2015, Course Average 6.8 (scale of 1 to 7)

- Senior Seminar

Fall 2019, Section 1, Course Average 6.7 (scale of 1 to 7)

Fall 2019, Section 2, Course Average 6.9 (scale of 1 to 7)

Note: College no longer uses numerical evaluations.

Courses Taught

- Occidental College: Principles of Economics, Intermediate Microeconomic Theory, Econometrics, Industrial Organization, Senior Seminar, Honors Thesis Seminar
 - Massachusetts Institute of Technology: Principles of Microeconomics
-

SERVICE

To the College (last 10 years)

Elected member, Advisory Council (tenure and promotion committee) (2018-2020)

Member, John Parke Young Committee on the Global Economy (2018-2019)

Faculty Advisor, Economics Student Association (2014-2016, 2017-2020)

Faculty Advisor, Women in Economics Club, (2017-2020, 2022-)

Member, Faculty Search Equity Committee (FSEC) (2022-)

FSEC Member, Urban and Environmental Policy faculty search (2022-2023)

External member, Math Department Senior faculty search, (2017-2018)

External member, Math Department Junior faculty search, (2017-2018)

Member, National Awards Committee (2011-2012, 2013-2014, 2017-2018)

President, Phi Beta Kappa (2015-2016)

Chair, Academic Resources Committee (2015-2016)

Vice President, Phi Beta Kappa (2014-2015)

Member, Academic Resources Committee (2014-2015)

Area Coordinator for Social Sciences, Summer Research Program (2010)

To the Department (last 10 years)

Department chair (2018-2020, 2021-2022)

Assessment Coordinator (2010-2020, 2022-)

Co-chair, Economics Department External Review (2017-2018)

Chair, Economics Faculty Search (2013-2014)

Honors Program Coordinator (2010-2011)

Last updated: April 25, 2024

Prior Testimony of Lesley Chiou, Ph.D.

I have given expert testimony in deposition or at trial as indicated below:

Erica Frasco et al. v. Flo Health, Inc. et al., Case No. 3:21-cv-00757-JD, United States District Court Northern District of California. Privacy class action against app developer. Deposition testimony on September 18, 2023.

Documents Relied Upon

Academic articles

- Austan Goolsbee, “In a World Without Borders: The Impact of Taxes on Internet Commerce,” *Quarterly Journal of Economics*, 115(2), 2000, pp. 561–576
- Austan Goolsbee, Michael F. Lovenheim, and Joel Slemrod, “Playing with Fire: Cigarettes, Taxes and Competition from the Internet,” *American Economic Journal: Economic Policy*, 2(1), 2010, pp. 131–154
- Bjørn Olav Johansen and Thibaud Vergé, “Platform price parity clauses with direct sales,” *University of Bergen Working Papers in Economics*, 2017
- Glenn Ellison and Sara Fisher Ellison, “Tax Sensitivity and Home State Preferences in Internet Purchasing,” *American Economic Journal: Economic Policy*, 1(2), 2009, pp. 53–71
- Jonathan Baker and Fiona Scott Morton, “Antitrust enforcement against platform MFNs,” *The Yale Law Journal*, 127(7), 2018, pp. 2176–2203
- Justin Johnson, “The Agency Model and MFN Clauses,” *The Review of Economic Studies*, 84(3), 2017, pp. 1151–1185
- Lesley Chiou and Erich Muehlegger, “Crossing the Line: Direct Estimation of Cross-Border Cigarette Sales and the Effect on Tax Revenues,” *B.E. Journal of Economic Analysis and Policy: Contributions to Economic Analysis and Policy*, 8(1), 2008
- Marc Rysman, “The Economics of Two-Sided Markets,” *Journal of Economic Perspectives*, 23(3), 2009, pp. 125–143
- Wing Man Wynne Lam, “Switching Costs in Two-Sided Markets,” *The Journal of Industrial Economics*, 65(1), 2017, pp. 136–182

Book chapters and books

- Hal R. Varian, *Microeconomic Analysis*, Third Edition, (New York, NY: W.W. Norton & Company, 1992)
- Jean Tirole, *The Theory of Industrial Organization*, (Cambridge, MA: The MIT Press, 1988)
- Margherita Colangelo, “Competition Law and Most Favoured Nation Clauses in Online Markets,” in *New Developments in Competition Law and Economics*, Volume 7, eds. Klaus Mathis and Avishalom Tor, (Switzerland: Springer Nature, 2019), pp. 295–317
- N. Gregory Mankiw, *Principles of Microeconomics*, Tenth Edition, (Boston, MA: Cengage Learning, 2023)

Data – from subscriptions to data vendors

- [REDACTED]
- [REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]

Data – from Valve and Plaintiffs

- steam_controller_usage.xlsx
- steam_lifetime_playtime.csv
- VALVE_ANT_1589683
- VALVE_ANT_1589686
- VALVE_ANT_2579266
- VALVE_ANT_2972499
- VALVE_ANT_2972500
- VALVE_ANT0753184
- VALVE_ANT0753185–416
- VALVE_ANT0753566
- VALVE_ANT0753567
- VALVE_ANT0753569
- VALVE_ANT0753570
- VALVE_ANT0753571
- VALVE_ANT0753572
- VALVE_ANT0753573
- WOLFIRE_00151799

Data – publicly available

- IsThereAnyDeal, “Bundles,” available at <https://isthereanydeal.com/bundles/>, accessed on December 7, 2022
- IsThereAnyDeal, “IsThereAnyDeal,” available at <https://isthereanydeal.com/>, accessed on July 5, 2023
- IsThereAnyDeal, “IsThereAnyDeal,” available at <https://isthereanydeal.com/>, accessed on October 2, 2023
- UserBenchmark, “GPU UserBenchmark,” available at <https://gpu.userbenchmark.com/>, accessed on November 1, 2023

Declarations

- Declaration of Erik Johnson, May 17, 2024

Depositions

- Deposition of Aaron Greenberg, 30(b)(6) (Microsoft), January 30, 2024
- Deposition of Adam Fossa, 30(b)(6) (Microsoft), January 29, 2024
- Deposition of David Rosen, 30(b)(6) (Wolfire), November 30, 2023
- Deposition of DJ Powers, 30(b)(6) (Valve), September 29, 2023
- Deposition of Eric Peterson, 30(b)(6) (Valve), November 15, 2023
- Deposition of Erik Johnson (Valve), September 26, 2023
- Deposition of Gabe Newell (Valve), November 21, 2023
- Deposition of Jacob Troyer (Shiver), November 27, 2023
- Deposition of Jason Owens (Dark Catt), December 6, 2023
- Deposition of Jason Ruymen (Valve), September 19, 2023
- Deposition of Jeffrey Rosen (Wolfire), November 17, 2023
- Deposition of John Robb (Dark Catt), November 28, 2023
- Deposition of Joost Rietveld, April 17, 2024
- Deposition of Kristian Miller (Valve), October 3, 2023
- Deposition of Matt Nickerson (Devolver), November 20, 2023
- Deposition of Merlyn Morgan-Graham (Wolfire), November 15, 2023
- Deposition of Nathaniel Blue (Valve), October 4, 2023
- Deposition of Nathaniel Muller (Humble Bundle), January 29, 2024
- Deposition of Ricky Uy (Komodo), October 24, 2023
- Deposition of Scott Lynch (Valve), October 12, 2023
- Deposition of Scott Lynch, 30(b)(6) (Valve), October 13, 2023
- Deposition of Sean Murray (Hello Games), January 11, 2024
- Deposition of Steven Schwartz, April 18, 2024

Expert reports

- Class Certification Expert Report of Steven Schwartz, Ph.D., February 8, 2024, and backup materials
- Expert Report of Professor Joost Rietveld, February 8, 2024

Industry reports

- [REDACTED]

Legal documents and pleadings from this matter

- Consolidated Second Amended Class Action Complaint, *In Re: Valve Antitrust Litigation*, March 23, 2023
- Letter from Nicolas Siebert (Quinn Emanuel) to Nathan Buchter (Fox Rothschild), "RE: In re Valve Antitrust Litigation, Case No. 2:21-cv-00563-JCC (W.D. Wash.)," September 13, 2023

- Motion for Class Certification and Appointment of Co-Lead Class Counsel, *In Re: Valve Antitrust Litigation*, February 8, 2024
- Order, *Dark Catt Studios Holdings, Inc. and Dark Catt Studios Interactive LLC v. Valve Corporation*, November 19, 2021
- Valve Corporation's Supplemental Responses and Objections to Plaintiffs' Second Set of Interrogatories, *In Re Valve Antitrust Litigation*, July 5, 2023

Legal documents and pleadings from other matters

- Opinion, *Epic Games, Inc. v. Apple, Inc.*, U.S. Court of Appeals for the Ninth Circuit, April 24, 2023
- Petition for a Writ of Certiorari, *Apple Inc. v. Epic Games, Inc.*, September 28, 2023

Produced documents

- [REDACTED] VALVE-000001
- Agreement between Valve Corporation and [REDACTED], "Valve Corporation Steam Distribution Agreement," May 24, 2022, VALVE_ANT_0019423-457
- Agreement between Valve Corporation and [REDACTED], "Valve Corporation Steam Distribution Agreement," June 4, 2019, VALVE_ANT_0024601-617
- Agreement between Valve Corporation and [REDACTED], "Valve Corporation Steam Distribution Agreement," October 25, 2019, VALVE_ANT_0039631-650
- Agreement between Valve Corporation and [REDACTED], "Valve Corporation Steam Distribution Agreement," March 1, 2021, VALVE_ANT_0022289-308
- Amendment to agreement between Valve Corporation and [REDACTED], "Amendment No. 1 to Steam Distribution Agreement," October 25, 2019, VALVE_ANT_0039616-623
- Email chain from Alden Kroll to Jane Ng et al., "Trip Notes: Boston developer meet-up," October 5, 2018, VALVE_ANT_0054709-714
- Email chain from [REDACTED] to Cassidy Gerber, "RE: Valve / [REDACTED] Intro," April 30, 2018, VALVE_ANT_1548456-461
- Email chain from DJ Powers to Tom Giardino, "RE: Launching a steam title on humble," February 15, 2021, VALVE_ANT_1186878-879
- Email chain from Erik Peterson to Nathaniel Blue, "RE: Humble Bundle Promo," May 22, 2018, VALVE_ANT_1129469-475
- Email chain from Erik Peterson to Tom Giardino et al., "RE: New Key Request Wizard," March 14, 2018, VALVE_ANT_0057685-695
- Email chain from Jason Ruymen to Erik Peterson and Tom Giardino, "RE: Game Keys in Bulk," October 4, 2017, VALVE_ANT_1188589-591
- Email chain from [REDACTED] to Cassidy Gerber, "RE: reality check needed," December 17, 2021, VALVE_ANT_1220287-289
- Email chain from Cassidy Gerber to Kristian Miller and Dario Casali, "RE: [REDACTED] August 10, 2018, VALVE_ANT_0053662-663

- Email chain from Kristian Miller to Dario Casali and Connor Malone, "RE: [REDACTED] August 10, 2018, VALVE_ANT_0818222-223
- Email chain from Kristian Miller to Tom Giardino, "RE: Rev Share Change on Past Year Titles," October 2, 2018, VALVE_ANT_2392320-323
- Email chain from Ricky Uy to Scott Lynch, "[REDACTED] March 26, 2015, VALVE_ANT_0293869-870
- [REDACTED] HB_Valve000367-370
- Email chain from Tom Giardino to [REDACTED], "RE: [NAGS] Humble Bundle Name Change," May 23, 2017, VALVE_ANT_0598921-925
- Email chain from Tom Giardino to [REDACTED], "RE: Price and release parity question," October 27, 2021, VALVE_ANT_1200520-522
- [REDACTED] SIE-VALVE-00080-097
- [REDACTED] SIE-VALVE-00116-123
- [REDACTED] IE-VALVE-00124-133
- [REDACTED] SIE-VALVE-00152-157
- [REDACTED] SIE-VALVE-00185-197
- [REDACTED] SIE-VALVE-00307-315
- [REDACTED] SIE-VALVE-00198-211
- [REDACTED] SIE-VALVE-00272-290
- Valve presentation, "Steam Rev Share – Group Update," VALVE_ANT_0046104
- [REDACTED] EPIC_VALVE_0000073-308

Public press and other web content

- 23 Dogs in a Trenchcoat, "How do you use controllers with itch.io games?" *Itch.io*, July 30, 2018, available at <https://itch.io/t/267079/how-do-you-use-controllers-with-itchio-games>, accessed on April 30, 2024
- 2K, "2K: Store Launcher Standalone," available at <https://store.2k.com/2klauncher-2klauncher>, accessed on April 26, 2024
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- 2Game, "How do I activate this so-called key?" August 4, 2023, available at <https://2game.zendesk.com/hc/en-us/articles/360007563551-How-do-I-activate-this-so-called-key>, accessed on May 15, 2024
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inc/matchmaking-essentials-for-cross-platform-multiplayer-games-20fd767554dd, accessed on May 8, 2024

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- Adam Speight, "Steam vs Epic Games Store: Which launcher is best?" *Trusted Reviews*, April 17, 2023, available at <https://www.trustedreviews.com/versus/steam-vs-epic-games-store-4318282>, accessed on October 23, 2023
- AdamKRDG, "Where can I publish my game as the Indie Developer," *EA Answers HQ*, October 2020, available at <https://answers.ea.com/t5/EA-Services-General-Questions/Where-can-I-publish-my-game-as-the-Indie-Developer/m-p/9598216>, accessed on April 29, 2024
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- Alan Bradley, "What Is VRAM? Why Games Are Using it More, and How to Optimize Your PC," *PCMag*, August 14, 2023, available at <https://www.pcmag.com/how-to/what-is-vram-why-games-are-using-it-more-and-how-to-optimize-your-pc>, accessed on May 11, 2024
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- Alex Perry, "Nintendo Switch OLED vs. Steam Deck OLED: Which handheld is better?" *Mashable*, December 8, 2023, available at <https://mashable.com/article/nintendo-switch-oled-vs-steam-deck-oled>, accessed on April 18, 2024
- Alice O'Connor, "The new EA app replacing Origin is still a launcher you'll only ever use when forced to," *Rock Paper Shotgun*, October 7, 2022, available at <https://www.rockpapershotgun.com/the-new-ea-app-replacing-origin-is-still-a-launcher-youll-only-ever-use-when-forced-to>, accessed on April 19, 2024
- Alissa McAloon, "Assassin's Creed Valhalla Won't Be Launching on Steam," *Game Developer*, April 29, 2020, available at <https://www.gamedeveloper.com/business/-i-assassin-s-creed-valhalla-i-won-t-be-launching-on-steam>, accessed on April 19, 2024
- AllYouPlay, "FAQ – Activation Guides," available at <https://www.allyouplay.com/topic/Frequently%20Asked%20Questions?id=27>, accessed on May 15, 2024
- Amazon Games, "Games," available at <https://www.amazongames.com/en-us>, accessed on April 17, 2024
- Amazon Luna, "Amazon Cloud Gaming," available at <https://luna.amazon.com/home>, accessed on May 12, 2024

- Amazon Prime Gaming, “Welcome to the Amazon Games App,” available at <https://gaming.amazon.com/amazon-games-app>, accessed on May 12, 2024
- Amazon, “Amazon Store,” available at <https://www.aboutamazon.com/what-we-do/amazon-store>, accessed on April 24, 2004
- Amazon, “Luna,” available at <https://www.amazon.com/luna/landing-page>, accessed on April 17, 2024
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- Andrew Webster, “Discord’s game store tries to top Steam and Epic by offering developers more money,” *The Verge*, December 14, 2018, available at <https://www.theverge.com/2018/12/14/18139843/discord-pc-games-store-revenue-split>, accessed on April 20, 2024
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- Andy Chalk, “The Epic Store is beginning to support cloud saves,” *PC Gamer*, July 25, 2019, available at <https://www.pcgamer.com/the-epic-store-is-beginning-to-support-cloud-saves/>, accessed on April 19, 2024
- Andy McDonald, “The solo indie developers who changed the world of gaming,” *BBC*, October 2, 2020, available at <https://www.bbc.co.uk/programmes/articles/32lB8gC6skS8Qcd0w6t4Qvj/the-solo-indie-developers-who-changed-the-world-of-gaming>, accessed on December 8, 2023
- Andy Robinson, “Valve brings achievements to Steam,” *GamesRadar+*, November 26, 2007, available at <https://www.gamesradar.com/valve-brings-achievements-to-steam/>, accessed on April 30, 2024
- Apple Developer, “Apple technologies for game developers,” available at <https://developer.apple.com/games/>, accessed on December 7, 2023
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Note: In addition to the documents on this list, I considered all documents cited in my report and my exhibits to form my opinions.